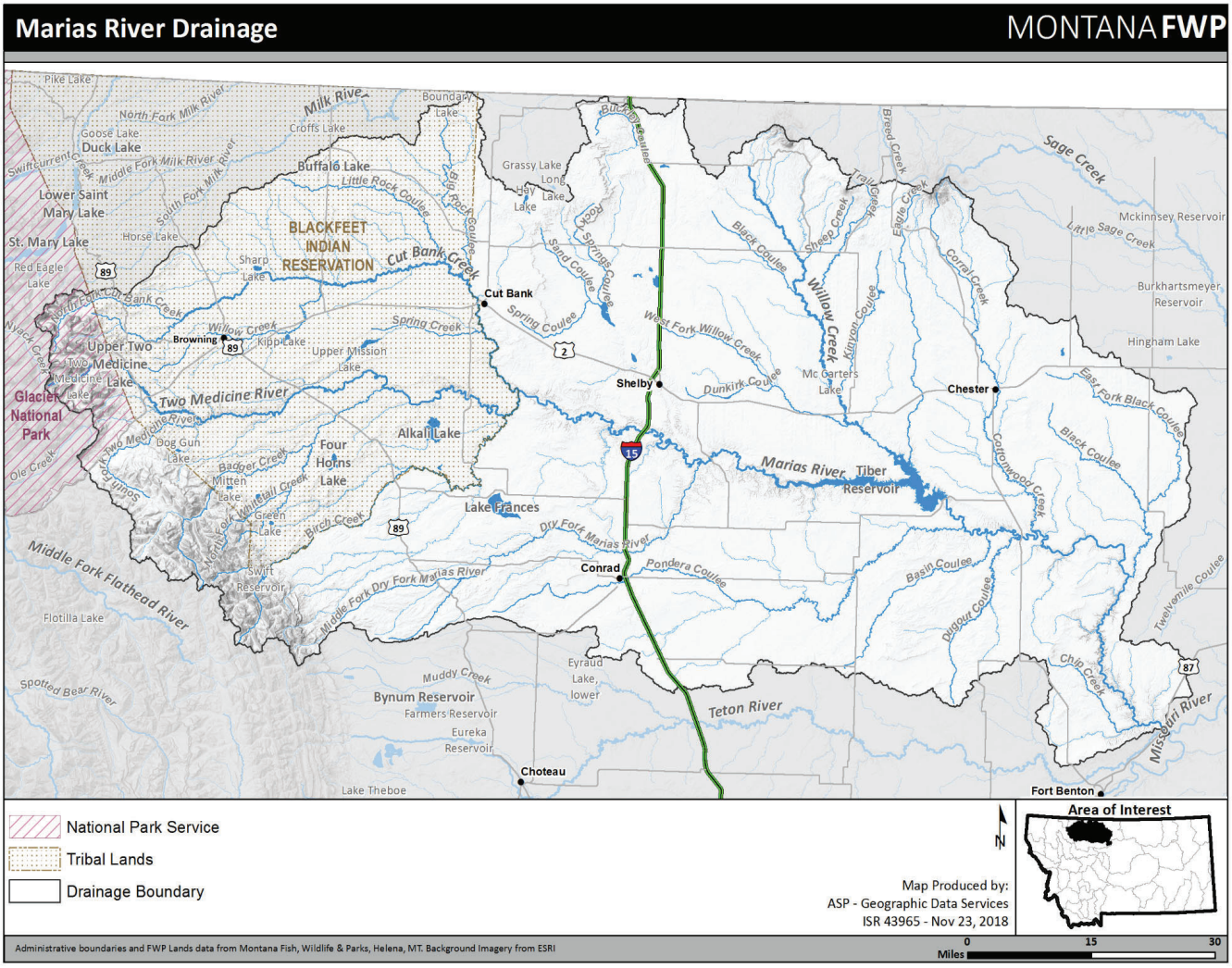

Marias River Drainage
MONTANA FWP
Pike Lake
North Fork Milk River
Milk River
Boundary Lake
Goose Lake
Duck Lake
Croffs Lake
Swiftcurrent Creek
Middle Fork Milk River
South Fork Milk River
Buffalo Lake
Little Rock Coulee
Big Rock Coulee
Lower Saint Mary Lake
St. Mary Lake
Horse Lake
BLACKFEET INDIAN RESERVATION
Cut Bank Creek
Red Eagle Lake
89
Sharp Lake
Cut Bank
Spring Coulee
Willow Creek
Spring Creek
Browning
Kipp Lake
Upper Mission Lake
Upper Two Medicine Lake
Two Medicine River
Glacier National Park
Two Medicine River
Dog Gun Lake
Alkali Lake
Four Horns Lake
Ole Creek
Badger Creek
Mitten Lake
Whitetail Creek
Green Lake
Birch Creek
Lake Frances
89
Middle Fork Flathead River
Swift Reservoir
Middle Fork Dry Fork Marias River
Dry Fork Marias River
Conrad
Pondera Coulee
Flotilla Lake
Spotted Bear River
Muddy Creek
Bynum Reservoir
Farmers Reservoir
Eureka Reservoir
Eyraud Lake, lower
Teton River
Choteau
Lake Theboe
Buck Coulee
Grassy Lake
Long Lake
Hay Lake
Sand Coulee
Boston Coulee
Black Coulee
Sheep Creek
Willow Creek
Kinyon Coulee
West Fork Willow Creek
Shelby
Dunkirk Coulee
Mc Garters Lake
15
Marias River
Tiber Reservoir
Breed Creek
Trail Creek
Eagle Creek
Sage Creek
Little Sage Creek
Mckinnsey Reservoir
Coral Creek
Burkhartsmeyer Reservoir
Hingham Lake
Chester
East Fork Black Coulee
Black Coulee
Cottonwood Creek
Basin Coulee
Dupuyer Coulee
Twelvemile Coulee
Chin Creek
87
Missouri River
Fort Benton
National Park Service
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
15
30
Miles

MARIAS RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Marias River is the largest tributary of the Missouri River between Canyon Ferry and Fort Peck dams. This north-central prairie stream drains about 7,100 square miles of the Rocky Mountain Front and Lewis Mountain ranges. The Marias begins 12 miles north of Valier (elevation 3,280 feet) and flows 170 miles east and south to its confluence with the Missouri River near Loma (elevation 2,550 feet). Major tributaries include the Two Medicine River, Cut Bank, Badger, and Birch creeks. The Teton River joins the Marias about 1 mile upstream from the Marias River's mouth and is discussed in its own section. Within this geographic area there are 40 lakes or reservoirs, totaling 24,227 surface acres.

The upper Marias River basin is situated in the mountainous area of the Lewis and Clark National Forest and Glacier National Park. Its upper tributaries originate at an elevation of about 10,000 feet and flow out onto the prairie. There is little development in the foothill transition zone between the mountains and prairie. The Marias originates at the confluence of the Two Medicine River and Cut Bank Creek about 35 miles east of the mountain zone. The upper mainstem reach flows 60 miles before entering the headwaters of Tiber Reservoir (Lake Elwell). Within this reach, the Marias flows through a rolling prairie landscape while entrenched in a well-defined valley about 1 mile wide. Soft shale and sandstone bluffs flank the river, rising 200 to 400 feet above the valley floor. The riparian vegetation consists of deciduous woodlands dominated by an overstory of cottonwoods and an undergrowth of willows, rose, and buffalo berry. The overall stream gradient is 5 feet/mile and varies from 11 feet/mile in the upper portion to less than 2 feet/mile in the lower end of the reach. Channel substrate consists primarily of cobbles and gravel with moderate amounts of siltation.

The lower Marias mainstem extends from Tiber Dam and flows for 78 miles to its confluence with the Missouri River. It lies in the semi-arid prairie lands at elevations between 3,000 and 4,000 feet. This area is moderately dissected with drainages that collect lowland runoff chiefly from March through June. With the exception of the Teton River, there are no perennial tributary streams joining the Marias. In fact, due to water management upstream, the lower Teton River has also not been perennial in most recent years. Flow regimens of the lower Marias River are completely regulated by the operations of Tiber Reservoir. Tiber Dam was completed in 1955 and is operated by the Bureau of Reclamation. This reservoir stores the high spring runoff and augments base flows of the lower river.

Throughout its entire course, the lower Marias is entrenched in a well-defined river valley. The valley is about 3/4 mile wide at the upper and lower ends, and narrows in the middle to form a scenic canyon less than 400 yards wide. Shale and sandstone bluffs border the river and rise 200 to 400 feet above the narrow floodplain. The riparian vegetation is dominated by older cottonwood trees with a moderate undergrowth of rose and buffalo berry. Islands and lower floodplain areas support stands of willow. The floodplain throughout the lower river is in a static condition because of the regulated flows and the absence of regular flooding events. This has limited the abundance of early-aged cottonwood stands and other riparian vegetation dependent

on flooding. The overall stream gradient is 3.5 feet/mile and varies only slightly from 3.0-4.5 feet/mile. Channel substrate is mostly composed of cobbles and gravel. Siltation increases in a downstream progression from Tiber Dam.

Land uses in the Marias River drainage are fairly diverse. In the forested areas of the upper basin, a considerable portion is in designated wilderness that includes the Bob Marshall Wilderness Area and Glacier National Park. Forest Service lands outside the Bob Marshall Wilderness Area are managed for semi-primitive recreation, livestock grazing, and minor amounts of timber harvest. A significant part of the upper basin is contained within the Blackfeet Indian Reservation, where fisheries resources are managed by the Blackfeet Tribe in cooperation with the USFWS. Grain and hay production and livestock grazing are principal uses which occur in the prairie lands of the upper and lower basins. Most of the land in this area outside the Blackfeet Reservation is privately owned. There are a few scattered parcels of federal land managed by either the BLM or BOR. These lands are primarily located along the perimeter of Tiber Reservoir and areas adjacent to the lower Marias River. The river and surrounding lands are important recreation areas. Fishing, hunting, picnicking, and floating are popular activities associated with the river environment.

FISHERIES MANAGEMENT

The headwaters of the Marias River include Cut Bank Creek and the Two Medicine River, which join to form the Marias River just south of Cut Bank, Montana. Cut Bank Creek, from where it leaves the Blackfeet Reservation and forms the eastern reservation boundary, is primarily a coolwater stream with rainbow and brown trout and mountain whitefish in its lower 19 miles however there is historical evidence of a warmwater species assemblage comprised of sauger, goldeye, black bullhead, and river carpsucker prior to construction of Tiber Dam. FWP has limited data on the current assemblage within this reach and will work with the tribe and agency partners to obtain updated information. The Two Medicine River flows approximately 40 miles from west to east, much of it on the Blackfeet Reservation. The Two Medicine River drainage contains larger tributaries, which are Badger, Birch, and Dupuyer creeks, and consists of about 773 miles of perennial streams. Approximately 123 perennial streams are named within the Two Medicine subbasin. The headwater tributaries to the Two Medicine River are generally cold and unproductive with low densities of trout.

The headwater drainage currently supports approximately 240 miles of stream inhabited by brook trout, 194 miles that support rainbow trout, 41 miles that support genetically unaltered westslope cutthroat trout in 12 streams, and 33 miles of stream containing genetically altered (hybridized) westslope cutthroat trout in 11 streams. The brook and rainbow trout are managed as recreational fisheries with consumptive harvest, while the unaltered westslope cutthroat trout are managed to maintain or enhance their populations to reduce the risk of extinction. The genetically altered populations are managed to maintain or enhance their populations as well, although harvest of robust populations is acceptable. The long-term goal of cutthroat conservation in the Marias River Drainage is to have approximately 20% of the historically occupied habitat restored to secure conservation populations of cutthroat trout. See Appendix A: Trout: Westslope and Yellowstone Cutthroat Trout for details.

The reach of the Marias River above Tiber Reservoir includes both coldwater and warmwater species and becomes primarily a warmwater fishery near Tiber Reservoir (Lake Elwell) where

walleye are the most abundant game fish. Coldwater game fish, including rainbow trout and mountain whitefish, also inhabit this reach, but in lower numbers. Northern pike, yellow perch, and burbot are other resident fish species of interest to many anglers. In addition, non-game fish present include common carp, flathead chub, lake chub, emerald shiner, fathead minnow, longnose dace, and Rocky Mountain sculpin, as well as mountain, white, and longnose suckers. Walleye use the upper Marias for spawning and a segment of the population remains in the river throughout the summer. Young-of-the-year walleye have been sampled during the summer, indicating that the river also provides rearing habitat. Larger-sized rainbow trout are found in the river mainly in the spring and early summer. The upper Marias River has only a moderate fishery. Fishing pressure has averaged 1,602 angler days from 2001-2009.

Below Tiber Dam 21 miles downstream to Highway 223 (Circle Bridge), the coldwater releases from the dam have altered the aquatic environment to favor coldwater salmonid species. Mountain whitefish exist in high numbers and are the most abundant game fish in the reach. Rainbow and brown trout occur in fair numbers, exhibiting excellent growth rates. Warmwater game fish, including sauger, walleye, northern pike, and burbot also inhabit this reach, but in lower numbers. Fourteen species of non-game fish have been sampled in this reach, including goldeye, common carp, flathead chub, lake chub, emerald shiner, Western silvery minnow, fathead minnow, longnose dace, river carpsucker, shorthead redhorse, longnose sucker, white sucker, yellow perch, and Rocky Mountain sculpin. The reach has a good fishery primarily because of improved water management by the BOR, which maintained minimum instream flows. This tailwater fishery is the only trout stream within a 50-mile radius, and it receives a moderate amount of angler use. Because of limited natural reproduction, spawning is supplemented by stocking trout.

The reach of the Marias River from Highway 223 (Circle Bridge) 57 miles downstream to the mouth contains a warmwater fishery in which sauger are the most abundant resident game fish. Walleye occur in fair numbers and are more numerous in the lower portion of the reach. Channel catfish are found in moderate numbers throughout the lower Marias. Game fish that migrate from the Missouri River into the Marias to spawn are shovelnose sturgeon, sauger, walleye, and channel catfish. Shovelnose sturgeon have been sampled throughout this reach during their spawning period, late-May through June. A moderate population of mountain whitefish, and an occasional brown trout, are the coldwater game fish found throughout the lower river. Sizes of sauger and walleye are about average for Montana river populations. The sizes reported for shovelnose sturgeon are for only the adult spawning segment; however, the maximum sizes found here surpass most other records and underscore the value of this high quality population. Sixteen resident non-game fish species have been sampled in the lower Marias River, including goldeye, common carp, flathead chub, lake chub, emerald shiner, plains minnow, western silvery minnow, fathead minnow, longnose dace, river carpsucker, shorthead redhorse, longnose sucker, white sucker, mountain sucker, stonecat, and Rocky Mountain sculpin. Blue sucker, smallmouth buffalo, bigmouth buffalo, and freshwater drum are the migratory species found in the river during their spawning seasons, but they reside in the Missouri River during the rest of the year. This reach of the Marias, mostly the lower 6 miles, receives intensive angling pressure during the spring spawning season (April through mid-July). During the rest of the season, there is a moderate amount of angler use. The entire reach below Tiber Dam to the mouth averaged 3,495 angler days per year from 2001-2009.

Both Lake Frances and Tiber Reservoir support fisheries where anglers focus angling on walleye, yellow perch and northern pike. Fisheries monitoring is focused on these species and forage species in an effort to provide an adequate forage base for the top-level predators. While Lake Frances has been stocked biennially to maintain walleye numbers, Tiber Reservoir walleye have provided adequate recruitment through wild reproduction after stocking that occurred back in the early 1970s and again in 1986 and 1988. The frequency of stocking in Lake Frances is being evaluated in an effort to provide high walleye growth rates and a desirable size structure. Hatchery walleye stocking may be considered for both reservoirs based on trends in forage abundance, reservoir water levels, growth, recruitment, relative weight, and reservoir wide abundance. Angler use has averaged 12,313 angler days per year on Lake Frances and 17,878 angler days on Tiber Reservoir for the 27-year period from 1982-2009. Creel surveys will be completed as funding is available.

HABITAT

Long-term USGS flow records are available for the Marias River near Shelby (river mile 140.6) and below Tiber Dam near Chester (river mile 78.3). The mean annual flow near Shelby for a 108-year period of record (103 years of data) from 1903-2011 was 885 cfs; the peak flow was recorded in 1964 at 241,000 cfs and was associated with a dam failure in a flood year (1964). The mean annual flow below Tiber Dam for a 65-year interrupted period of record (58 years of data) between 1945-2011 was 800 cfs. Extreme flows since Tiber Dam was completed in 1955 have ranged from a low of nearly zero to a high of 10,400 cfs. A shorter period of record (13 years) for the Marias River near the mouth at Loma between 1960-72 showed a mean annual flow of 977 cfs, with a low of 45 cfs and a high of 10,800 cfs.

The largest user of water in the Marias Basin is irrigated agriculture. A total of 206,696 acre-feet or 34% of the average annual flow was consumed during 1980, a fairly typical year. Including Tiber Reservoir, four other reservoirs in the basin have storage capacities greater than 1,000 acre-feet. All except Tiber are used primarily for irrigation. These reservoirs have an estimated total storage capacity of 1,542,158 acre-feet.

Water temperatures downstream of Tiber are also affected by the operation of the dam. Deep cold water releases from the reservoir significantly reduced the river's summer temperatures at least 20 miles below the dam. The 7.5MW hydroelectric generating facility added to Tiber Dam in 2005 mitigates these temperature modifications to some extent.

FISHING ACCESS

Access to the 138 miles of river is generally limited to seven bridge crossings, including: the Loma Bridge FAS; BLM's Sullivan Bridge, Pugsley Bridge, and Moffat Bridge Recreation Areas; 2 miles of public river frontage, one immediately upstream from Tiber Reservoir and the other downstream from the dam; and FWP's Marias River Wildlife Management Area (WMA), a 5,845 acre parcel that includes 16.9 river miles between its upper and lower boundaries. The WMA is located between Sullivan Bridge Road and I-15 in the reach above Tiber Reservoir. Although the river is usually navigable, the distances between bridges in the upper river and most portions of the lower river generally require more than a day's travel and are becoming a more popular recreational float. Many reaches of the Marias River receive only light fishing pressure primarily due to its remote and relatively inaccessible location. Most of the private

landowners allow access with permission; however, the terrain bordering the river is fairly rugged making physical access difficult.

SPECIAL MANAGEMENT ISSUES

FWP continues to cooperate with the Blackfeet Fish and Wildlife Department on fisheries issues, particularly projects involving native westslope cutthroat trout on streams that traverse both reservation and adjacent public lands.

FWP will also continue to provide technical advice and work with the BOR to manage flows downstream from Tiber Dam to maintain a more natural hydrograph designed to benefit the native fish assemblage and migratory fishes in the Marias below the dam and in the Middle Missouri River downstream of the Marias River.

Suspect samples of dresenid mussels were detected during AIS monitoring in Tiber Reservoir (Lake Elwell) in fall 2016 and again during monitoring in 2017. To date, no adult invasive mussels have been detected in Tiber. The AIS program will continue monitoring and maintain boat check stations at Tiber to minimize the risk of spread of potential invasive species from Tiber to other water bodies.

FISHERIES MANAGEMENT DIRECTION FOR THE MARIAS RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
So. Fork Two Medicine River – Headwaters to Blackfeet Reservation Boundary	15.5 miles	Rainbow trout	Wild	General	Manage as recreational fishery with consumptive harvest. Promote harvest.
		Westslope cutthroat trout hybrids	Wild	Conservation	Maintain population to reduce extinction risk. Manage to prevent additional hybridization.
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 16 cfs. Evaluate sites for a major barrier.					
Birch Creek – Swift Reservoir to Highway 358	43 miles	Brook trout, Rainbow trout, Burbot, Walleye	Wild	General	Maintain a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 64 cfs.					
South Fork Dupuyer Creek	8.8 miles	Brook trout	Wild	General	Manage as recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Habitat needs and activities: Maintain habitat and instream flows of 6 cfs.					
North Fork Dupuyer Creek	10.5 miles	Brook trout	Wild	General	Manage as recreational fishery with consumptive harvest.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance population to reduce extinction risk. Monitor to ensure hybrids do not ascend barrier at high magnitude flows.
Habitat needs and activities: Maintain habitat and instream flows of 12 cfs. Evaluate possible modification of barrier to maintain isolation at all flows.					
Dupuyer Creek	37.4 miles	Brook trout, Rainbow trout	Wild	General	Manage as recreational fishery with consumptive harvest.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 12 cfs.					
South Badger Creek	10.9 miles	Brook trout, Rainbow trout	Wild	General	Manage as recreational fishery with consumptive harvest. Prevent competition or hybridization with WCT.
		Westslope cutthroat trout (N)	Wild	Conservation	Maintain population to reduce extinction risk. Monitor to ensure nonnatives do not ascend barrier at high magnitude flows.
Habitat needs and activities: Maintain habitat and instream flows of 40 cfs.					
North Badger Creek	20 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain population to reduce extinction risk. Monitor to ensure nonnatives are not illegally introduced.
Habitat needs and activities: Maintain habitat and instream flows of 14 cfs.					
Badger Creek-from Confluence of North and South Badger Creeks to Blackfeet Reservation Boundary	6.5 miles	Brook trout, Rainbow trout, Westslope cutthroat trout hybrids	Wild	General	Manage as recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 60 cfs.					
Cut Bank Creek – From the Blackfeet	19 miles	Rainbow trout, Brown trout	Wild	General	Manage as recreational fishery with consumptive harvest.
Reservation Boundary to the Mouth		Mountain whitefish (N), Burbot (N), Walleye	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 75 cfs.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Brook trout Streams in Two Medicine River Basin	240 miles	Brook trout	Wild	General	Manage for a consumptive harvest.
Swift Reservoir	450 acres	Rainbow trout	Wild	General	Marginal fishery with low fishing pressure and split jurisdiction with the Blackfeet Reservation. Maintain wild population for a recreational fishery with some consumptive harvest.
Marias River – Confluence of Two Medicine River & Cutbank Creek to the Headwaters of Tiber Reservoir	60 miles	Rainbow trout, Northern pike	Wild	General	Maintain a recreational fishery for consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain populations within historic levels.
		Burbot (N)	Wild	General	Maintain populations within historic levels.
		Walleye	Wild	General	Maintain a recreational fishery for consumptive harvest and maintain access for adfluvial spawning populations within historic levels.
		Yellow perch	Wild	General	Maintain populations within historic levels with some consumptive harvest.
Habitat needs and activities: Maintain habitat and instream flows of 200 cfs.					
Tiber Reservoir (Lake Elwell)	14,842 acres	Walleye	Wild	General	Manage for a consumptive harvest with an opportunity for a trophy fish. Manage based on the biology of the fishery. Emphasize natural recruitment.
		Yellow Perch	Wild	General	Maintain population within historic levels and provide a major component of the forage base and contribute to recreational fishery.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Cisco	Wild	General	Maintain population within historic levels and provide a major component of the forage base for large predatory species in Tiber.
		Lake trout	Wild	General	Manage for a consumptive harvest.
		Northern pike	Wild	General	Manage for a consumptive harvest with the potential for a trophy fish.
		Burbot (N)	Wild	General	Manage for a consumptive harvest.
		Rainbow trout	Wild	General	Manage as an occasional species available for a consumptive harvest.
		Shovelnose sturgeon (N)	Wild	General	Maintain existing small population present. Consider potential for reestablishing a larger population.
Marias River – Tiber Dam to Highway 223 (Circle Bridge)	21 miles	Brown trout, Rainbow trout	Wild/ Hatchery	General	Maintain a recreational fishery with some consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
		Burbot (N), Walleye, Northern pike	Wild	General	Maintain population within historic levels.
Habitat needs and activities: Maintain habitat and instream flows of 500 cfs.					
Lake Frances	3,618 acres	Walleye	Hatchery/ Wild	General	Manage for a consumptive harvest based on biology of the fishery. Continue to evaluate the contribution of biennial walleye plants and adjust if necessary to maintain a balance with the forage base.

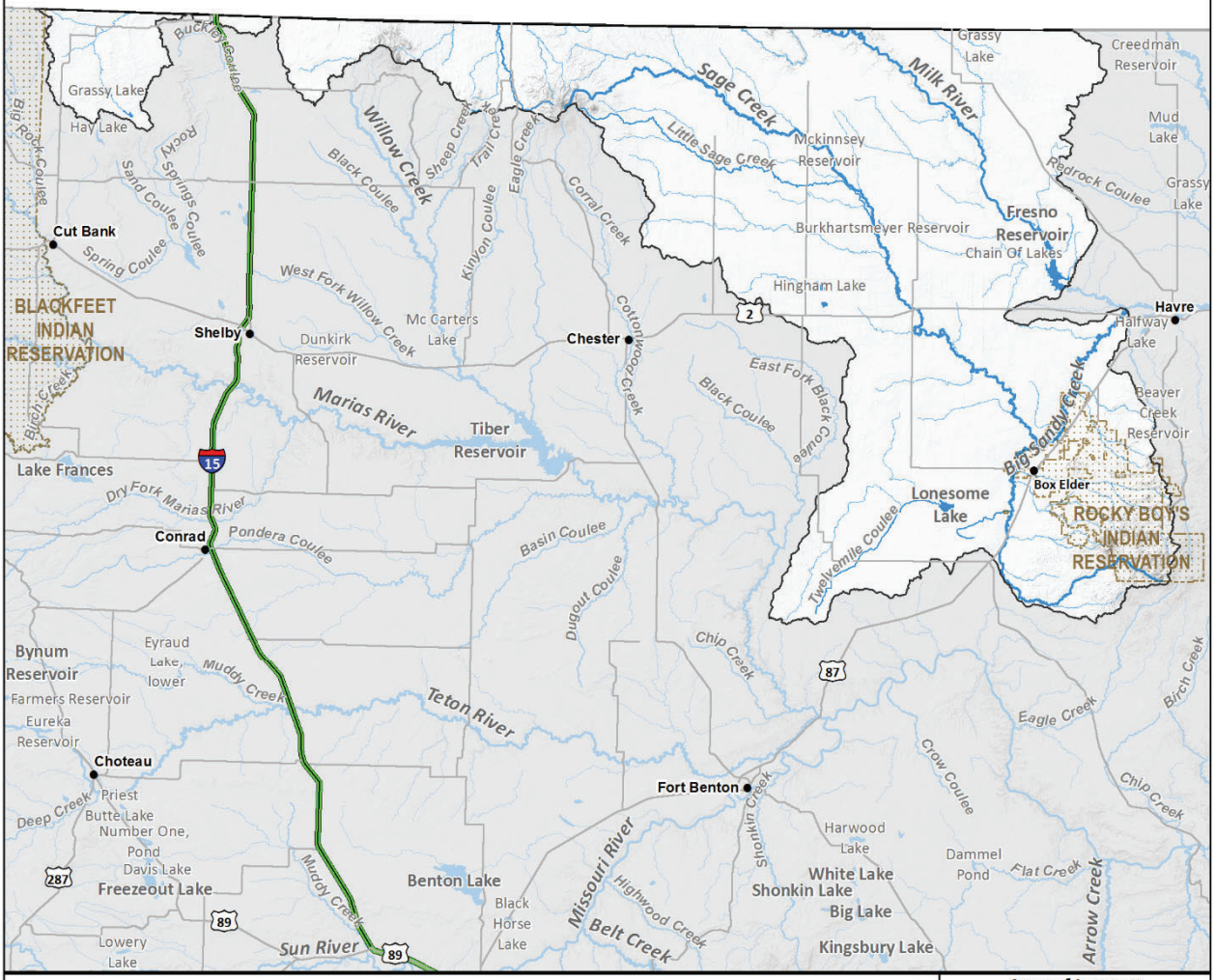
Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Northern pike, Burbot (N)	Wild	General	Manage for a consumptive harvest.
		Yellow perch	Wild	General	Maintain population within historic levels to provide a major component of the forage base and contribute to recreational fishery. Prohibit as a species in any fishing contest to optimize forage reproductive potential.
		Rainbow trout	Wild	General	Manage as an occasional species available for a consumptive harvest.
Habitat needs and activities: Manage forage base using the forage species currently present.					
Marias River – Highway 223 (Circle Bridge) to Mouth	57 miles	Sauger (N)	Wild	Restrictive Regulations	Maintain and enhance the population while maintaining a recreational fishery with some consumptive harvest.
		Mountain whitefish (N)	Wild	General	Maintain population within historic levels.
		Shovelnose sturgeon (N)	Wild	General	Maintain spawning run population within historic levels.
		Walleye, Channel catfish (N) Burbot (N), Brown trout	Wild	General	Maintain population within historic levels.
		Smallmouth bass	Wild	General	Maintain existing population levels if no observed impacts to native species.
Habitat needs and activities: Maintain habitat and instream flows of 560 cfs.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Westslope Cutthroat Trout Genetically Unaltered Conservation Population Streams (Isolated Single Species Populations) (12 Streams)	41 miles	Westslope cutthroat trout (N)	Wild	Conservation	Maintain or enhance populations to reduce extinction risk.
Habitat needs and activities: Maintain or improve habitat and explore suitable sites for barriers or reducing fragmentation of westslope cutthroat trout occupied habitat.					
Westslope Cutthroat Trout Genetically Altered Conservation Population Streams (11 Streams)	32.9 miles	Westslope cutthroat trout & hybrids (Mixed populations)	Wild	Conservation	Maintain or enhance populations. Allow harvest in robust populations.
Habitat needs and activities: Manage forage base using the forage species currently present.					

Upper Milk River Drainage

MONTANA **FWP**



UPPER MILK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Upper Milk River flows approximately 105 miles through Alberta before re-entering Montana in Hill County, approximately 34 miles upstream of the Fresno Reservoir headwaters. This section of the Milk River consists of badlands, native grasses, sagebrush, and shrub/forest landscapes located primarily on federal lands. The Upper Milk area encompasses approximately 2,100 square miles. Sage Creek is one of two major tributaries to the Milk River, flowing from the headwaters near the Sweetgrass Hills and coursing through Liberty and Hill counties approximately 60 miles southeast to the junction with Big Sandy Creek. Stream-side vegetation consists mainly of native grasses, rose, and sagebrush. Surrounding lands are privately owned pasture and cultivated croplands. Big Sandy Creek begins in the Bear Paw Mountains and flows approximately 52 miles northeast through Choteau and Hill counties to its confluence with the Milk River downstream of Fresno Reservoir. Surrounding lands consist of timbered mountains, prairie pastures, and cultivated croplands located on private lands and the Rocky Boy Indian Reservation.

There are numerous reservoirs constructed on ephemeral streams located throughout this area. Most of these reservoirs are too shallow for fisheries and are primarily used for stock water and irrigation. The largest reservoirs are Fresno and Bailey, both of which receive high fishing pressure and other recreational use. Fresno is managed as an irrigation storage facility by the Bureau of Reclamation and experiences considerable annual water level drawdowns.

FISHERIES MANAGEMENT

Fresno Reservoir is managed primarily for walleye. Management efforts are focused on working with the Bureau of Reclamation on water-level management as this is viewed as the principal limiting factor affecting the fishery during key spawning and rearing periods. Fresno Reservoir and the Milk River upstream of Fresno Dam support a number of fish species including, walleye, yellow perch, lake whitefish, northern pike, black crappie, burbot, sauger, rainbow trout, stonecat, white sucker, longnose sucker, emerald shiner, spottail shiner, Rocky Mountain sculpin, fathead minnow, brook stickleback, lake chub, northern redbelly dace, longnose dace, and western silvery/plains minnow. Many of these species are also found in Sage and Big Sandy creeks. Species such as black bullhead, bluegill, smallmouth bass, largemouth bass, Iowa darter, and brassy minnow are found in the smaller impoundments and tributaries. Brook trout are found in the headwaters of Big Sandy Creek.

Fresno Reservoir had been stocked with approximately 100,000 walleye fingerlings annually from 2003-2011. Walleye fingerlings stocked from 2007-2011 were oxytetracycline (OTC) marked to determine survival of hatchery walleye in Fresno. Based on this analysis, survival of stocked walleye in Fresno is high, averaging 56% from 2007-2012. High stocking densities combined with survival of naturally reproduced walleye resulted in walleye densities that were suppressing a limited forage base. In an effort to improve walleye growth and sustain a balanced predator/prey fishery, FWP began evaluating walleye stocking in Fresno in 2010-11.

In 2012, FWP made the decision to discontinue walleye stocking in Fresno Reservoir with the goal of improving walleye growth rates and size structure, while maintaining sustainable densities of forage species. Natural reproduction and survival of walleye has remained high and relative abundance of walleye reflects the average historical abundance (16 walleye/net).

From 2011-2018 FWP has transferred 3,000-9,000 pre-spawn yellow perch annually to Fresno Reservoir in an effort to increase production and bolster the forage base. In 2016 an enhancement project was initiated to increase yellow perch spawning and rearing habitat using discarded Christmas trees. In a cooperative effort with Fresno Walleyes Unlimited and FWP Future Fisheries Improvement Program, trees are bundled and submerged at optimal depths each spring, creating reefs to help boost production of yellow perch and other forage fish. The forage base (yellow perch, black crappie, and spottail shiner) will be monitored with regard to spawning success, water conditions, and predator densities. As with all multi-tiered fisheries, forage production and forage diversity is critical to maintain favorable predator growth rates, age structure, and condition.

Walleye condition (a measure of "plumpness") in Fresno has ranged from 85-92.5 (100 and above is considered good) with walleye less than 15 inches generally higher than larger walleye (greater than 20 inches). In poor forage years, walleye condition can be less than 80 contrasted by high forage production years where walleye condition can exceed 100. Historically, Fresno's walleye population has been comprised mostly of stock (10-15-inch) and quality (15.1-20-inch) sized fish. Fresno walleye exhibit good growth in the first five to six years, achieving lengths up to 20 inches. These growth rates suggest forage availability at the early life stages for walleye in Fresno is good. However, memorable (greater than 25-inch) walleye occur at very low densities leading biologists to suspect that the forage base in Fresno, which is dominated by smaller forage fish (less than 3-inches), is limiting recruitment of older aged fish to the population.

Although water level management on Fresno Reservoir has been identified as one of the key limiting factors to the fishery, efforts to have the recreational values recognized by the Bureau of Reclamation as an authorized purpose have yielded limited success. FWP will continue to work with BOR to ensure that the fishery values are communicated and continue to emphasize the recommended operational guidelines developed by FWP in 2011 (see attachment).

FWP will emphasize projects targeted at improving forage populations. Projects such as tree reefs and transferring yellow perch from disease free donors will continue as warranted. Identifying, securing and disease testing potential yellow perch donor sources for supplemental stocking events at Fresno and other surrounding reservoirs will continue. Natural reproduction will continue to be the primary means of maintaining walleye densities in Fresno. However, utilizing state fish hatcheries to supplement Fresno Reservoirs walleye population will be evaluated on an annual basis. These evaluations will consider current walleye density, forage availability and projected water levels.

Smaller reservoirs located throughout the area are managed for warm and cool water species. Trapping and transport of warm-water species such as yellow perch, bluegill, black crappie, and fathead minnows will continue to establish new fisheries, promote kids fishing, and establish forage fish populations or to supplement existing game fish populations. Hatchery-reared

rainbow trout, brook trout, and largemouth bass will continue to be stocked into those ponds with sufficient water depth and good overwinter survival. Ponds and reservoirs will be re-stocked immediately following severe drought events or winterkills if favorable habitat conditions exist. Windmill aeration systems will be maintained on those ponds with marginal depths and low winter dissolved oxygen levels.

The Milk River above Fresno Reservoir has little information identifying species composition, densities, specific interactions, and habitat use of native and non-native fishes. A collaborative effort between FWP and Alberta Sustainable Resource Development evaluated sauger genetics in the Upper Milk River. The study determined this population is genetically pure and not hybridizing with walleye located downstream in Fresno Reservoir. Development and implementation of a standardized sampling program in the Upper Milk River targeting multiple habitats is currently being developed for long-term monitoring of the fish community.

Throughout the Upper Milk River Drainage, angling opportunities occur year-round, with anglers targeting the rivers and streams during the spring, shifting to the ponds and reservoirs from late spring through the winter months. Shore, boat, and ice fishing opportunities exist throughout the area, with anglers using a variety of methods to catch multiple species. Anglers need to be aware of the no live bait fish restriction on Fresno Reservoir and the Milk River above Fresno Reservoir.

HABITAT

Flows on the Upper Milk River are highly variable and can range from intermittent pools (no flow) to flows exceeding 5,000 cfs depending on the time of year and precipitation. Flows are augmented annually through the transbasin diversion from the St. Mary River and canal system with up to 650 cfs during the irrigation season (April-September). Fresno Reservoir is a mainstem irrigation storage facility located on the Milk River with annual water fluctuations of more than 21 feet. Extreme reservoir drawdowns have negative impacts to the fishery and can result in poor spawning conditions, poor rearing habitat, poor overwinter water conditions, and increased fish entrainment downstream. Although uncommon, there have been years in which recreationists were unable to launch boats due to low reservoir water conditions.

Fish passage issues exist in the Upper Milk drainage, but little work has been done to identify these and determine passage enhancement opportunities. Plans are being developed to identify areas of impaired passage and implement safe water crossings which emphasize fish passage and habitat connectivity. Recommending best management practices for improving bank stabilization and riparian habitats, while opposing land use activities that further degrade habitat and water quality will be emphasized.

Riparian habitats associated with smaller reservoirs vary depending on rotational grazing plans and fencing. Water quality varies as well based on surrounding land use practices, water depth, and seasonal climate variables. Efforts are underway to work with land management agencies and private landowners to improve riparian health through a variety of treatments.

FISHING ACCESS

The Upper Milk River is surrounded by federal lands, but access to those lands is limited. One access site is off a county road approximately 10 miles upstream of the Fresno Reservoir

headwaters. Access to Fresno Reservoir is good (primarily BOR ownership), with campgrounds provided and managed by the Fresno Chapter of Walleyes Unlimited, and primitive camping available throughout the lower half of the reservoir. There are two concrete boat ramps located near the Dam and in Kremlin Bay.

Bailey Reservoir, a popular youth fishery and important regional fishery is the only State Fishing Access Site located in this area. Amenities at Bailey Reservoir include a fishing pier, pavilion, and boat ramp.

The FWP Region 6 pond guide will continue to be updated and distributed to anglers to increase awareness on local pond opportunities. Access and opportunity will continue to be a major emphasis throughout the area.

SPECIAL MANAGEMENT ISSUES

Fishing Tournaments

Currently, one open water walleye tournament and one ice fishing tournament are held on Fresno Reservoir annually. Tournament dates must be finalized with the BOR prior to completion of the permit application issued by MFWP. Tournaments will be reviewed on an individual basis. Evaluation of proposed tournaments will include potential biological and social impacts. Each tournament undergoes a 30-day public review and comment period. Tournament directors will be required to report post-tournament catch-rate information in a standardized format.

Milk River and Fresno Reservoir Water Management

The St. Mary canal and existing infrastructure is approaching 100 years of age and is in need of major repairs. The St. Mary's Working Group is working on a plan to update and repair the existing infrastructure to ensure supplemental water continues to provide irrigation water to agricultural producers throughout the Milk River watershed. The BOR recently completed a transbasin water analysis study that identified potential climate change related impacts to the watershed. Anticipated impacts include highly variable water supplies that have the potential to limit all water uses over the next 40-year time period.

Dace Conservation

The Upper Milk River drainage is located in historic pearl, northern redbelly and northern redbelly x finescale dace range. A recent study (Stringer 2018) found the distribution and density of all three species in Montana has declined, especially pearl dace. Declines in dace distribution were attributed to predation by northern pike, which have expanded their distribution in many prairie streams. Conservation and management strategies include: 1) Identify threats to known pearl dace populations (northern pike populations) 2) Expand sampling effort to identify additional dace populations within their historic range 3) Identify strategies to conserve current pearl dace populations (barrier construction, northern pike suppression and future northern pike stocking strategies near known pearl dace populations) 4) Long-term monitoring program to assess population trends

*Fresno Reservoir Water Management Recommendations**

In an effort to minimize the operational impacts on the fisheries resources of Fresno Reservoir and provide for a more stable and balanced fishery, the following operational statements are intended to minimize impacts if operational flexibility exists. Additionally, these guidelines remain cognizant of Fresno Reservoir Allocations; specifically, the Active Conservation Pool (2567.0 feet) that recognizes Fish, Wildlife and Recreation as components of this water allocation.

Yellow perch, black crappie are critical forage and highly prized sport fish. Spottail shiners are an important forage fish that is vital to walleye growth and survival. Populations of these species are tightly correlated with reservoir operations.

- The most favorable spawning conditions for yellow perch occur when pool elevations are greater than 2565.0 during April and May. Maximum production occurs when reservoir levels are stable or increasing during these months.
- Black crappie and spottail shiners spawning conditions are maximized when pool elevations are greater than 2570.0 during May and June.
- Average winter (Oct.-Mar) pool elevation from 1941-2011 was 2559.5 or 16 ft below full pool. At this drawdown level limited shoreline structure is submerged.
- Overwinter pool elevations of 2561.5-2562.5 feet (which represents only a 2-3 foot increase) would add 156-249 surface acres or 4,555-6,955 acre-feet and submerge critical rock/cobble substrate for young of year fishes to seek refuge from predators.
- Pool elevations below 2555.0 have been shown to be extremely detrimental to the entire fish community of Fresno Reservoir.

FWP recognizes the complexities and importance of Milk River water to the many users of the system. Additionally, FWP strongly supports agricultural production of the Hi-Line and the critical link to reliable, cost-effective Milk River water. FWP stands in support of the restoration of the Milk/St Mary system and is willing to partner with the St. Mary Rehabilitation Working Group, USBR and others to work towards this common goal. FWP appreciates the difficulty that USBR faces in operation of Fresno and Nelson Reservoirs and is grateful for concessions that have been made to balance water needs through the basin. We hope that managing for healthy fisheries resources throughout the Milk River Watershed can be a common goal for USBR and FWP into the future.

*Submitted to BOR in March 2011

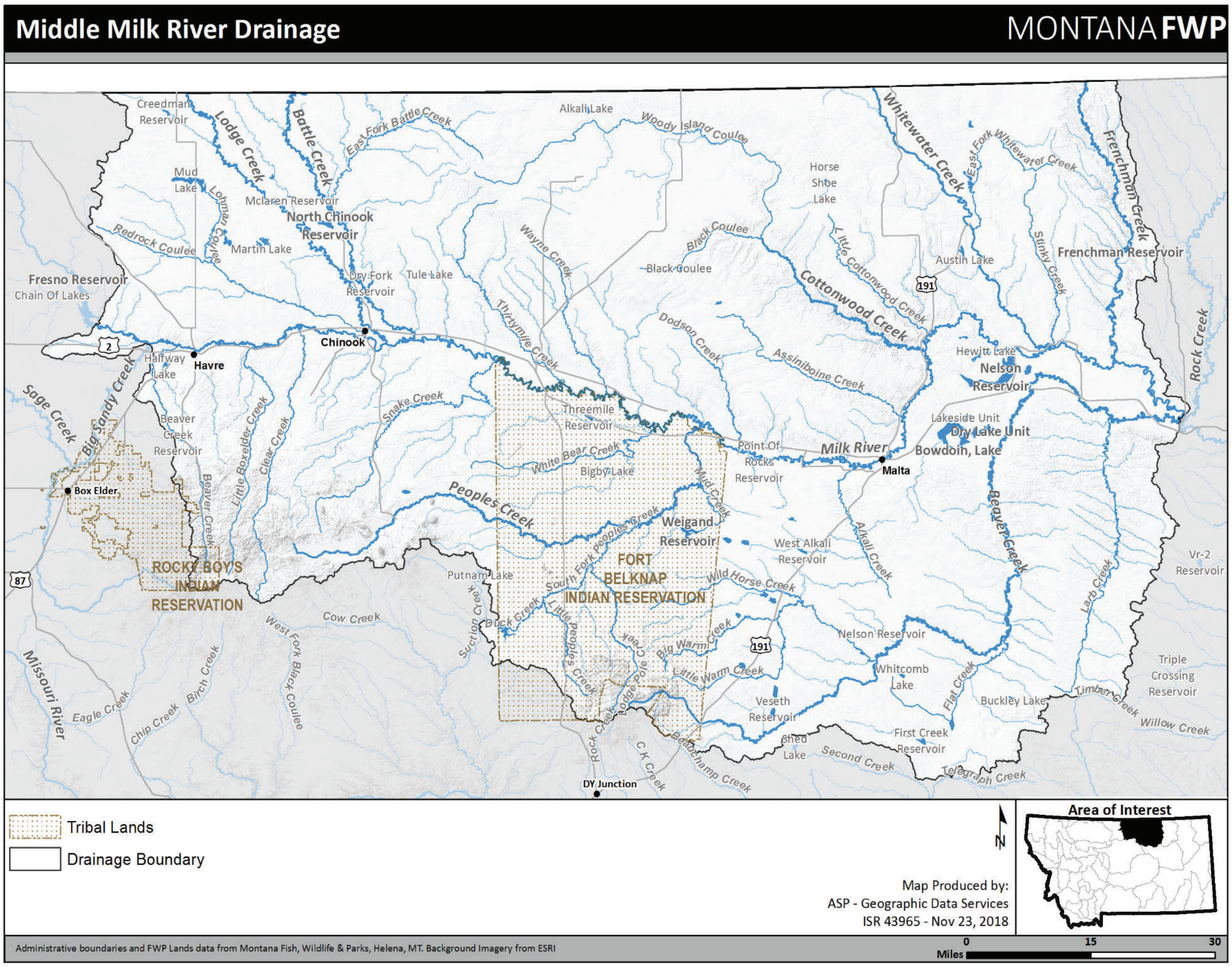
FISHERIES MANAGEMENT DIRECTION FOR UPPER MILK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Milk River - Canadian border to Fresno Reservoir headwaters	34 miles	Walleye, Northern pike	Wild	General	Develop and implement a standardized sampling program.
		Sauger (N), Burbot (N)	Wild	General/ Conservation	Continue to work with Alberta Sustainable Resource Development to collect sauger genetics in the upper Milk River.
		Native non-game fishes (N)	Wild	Conservation	Develop and implement a standardized sampling program.
Habitat needs and activities: Improve habitat to support ecosystem function and production of all species.					
Fresno Reservoir	5,700 acres	Walleye	Wild	General	Manage for wild, naturally produced walleye at relative abundances that maximize growth and diverse population age structure. Relative abundances will be managed at sustainable levels relative to prey community. Hatchery walleye stocking will be evaluated based on forage abundance, reservoir water levels, growth, relative weight and reservoir-wide relative abundance. Implement periodic creel surveys as funding allows.
		Northern pike, Black crappie, Lake whitefish	Wild	General	Continue to evaluate and manage fish communities to ensure sustainable populations in light of widely fluctuating reservoir water levels. Periodically evaluate fishing regulations to ensure recreational harvest is sustainable.

Continue next page

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Yellow perch	Wild	General	Implement reservoir habitat enhancement projects as funding and time allows. Transfer yellow perch from disease free sources as needed.
		Sauger (N), Burbot (N)	Wild	General/Conservation	
Habitat needs and activities: Work with Bureau of Reclamation and water users to optimize water management in Fresno Reservoir to benefit the resident fisheries. Optimal water management should target steady to rising reservoir water levels during critical spawning periods (mid April-mid June). It should also target favorable overwinter pool elevations that submerge rock substrates and increase young of year rearing habitat. Implement habitat enhancement projects such as tree reefs to increase spawning and rearing habitat.					
Big Sandy Creek	52 miles	Walleye, Northern pike, Yellow perch, Black bullhead	Wild	General	Begin to understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Sage Creek	60 miles	Northern pike, Yellow perch	Wild	General	Begin to understand fish assemblage and population size of game fishes.
		Native non-game fishes	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Bailey Reservoir	70 acres	Northern pike, Yellow perch, Black crappie	Wild	General	Seek opportunities to increase reservoir habitat with use of natural or artificial structures.
		Walleye	Hatchery	Put, Grow and Take	Stock 10,000 walleye fingerlings on alternate years.
Habitat needs and activities: Seek opportunities to increase reservoir habitat with use of artificial structures.					


Middle Milk River Drainage
MONTANA FWP
Creedman Reservoir
Lodge Creek
Battle Creek
East Fork Battle Creek
Alkali Lake
Woody Island Coulee
Whitewater Creek
East Fork Whitewater Creek
Frenchman Creek
Mud Lake
Lohman Coulee
Mclaren Reservoir
North Chinook Reservoir
Horse Shoe Lake
Redrock Coulee
Martin Lake
Wayne Creek
Black Coulee
Little Cottonwood Creek
Austin Lake
Stinky Creek
Frenchman Reservoir
Fresno Reservoir
Chain Of Lakes
Dry Fork Reservoir
Tule Lake
Cottonwood Creek
Rock Creek
Chinook
Thirtymile Creek
Dodson Creek
Hewitt Lake
Nelson Reservoir
Halfway Lake
Havre
Assiniboine Creek
Sage Creek
Big Sandy Creek
Snake Creek
Threemile Reservoir
Lakeside Unit
Dry Lake Unit
Beaver Creek Reservoir
Little Boxelder Creek
Clear Creek
White Bear Creek
Point Of Rocks Reservoir
Milk River
Bowdoin, Lake
Malta
Bigby Lake
Box Elder
Peoples Creek
Mud Creek
Beaver Creek
Weigand Reservoir
West Alkali Reservoir
Alkali Creek
Vr-2 Reservoir
ROCKY BOY'S INDIAN RESERVATION
FORT BELKNAP INDIAN RESERVATION
Putnam Lake
South Fork Peoples Creek
Wild Horse Creek
Larb Creek
Cow Creek
West Fork Black Coulee
Suction Creek
Buck Creek
Little Peoples Creek
Big Warm Creek
Nelson Reservoir
Missouri River
Birch Creek
Little Warm Creek
Whitcomb Lake
Flat Creek
Triple Crossing Reservoir
Eagle Creek
Chip Creek
Veseth Reservoir
Buckley Lake
Timber Creek
Willow Creek
Rock Creek
Lodge Pole Creek
Shed Lake
First Creek Reservoir
Second Creek
C K Creek
Beauchamp Creek
Telegraph Creek
DY Junction
2
87
191
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
15
30
Miles

MIDDLE MILK RIVER DRAINAGE

PHYSICAL DESCRIPTION

This drainage is located in north central Montana in Hill, Blaine, and Phillips counties and encompasses approximately 8,700 square miles. The landscape is diverse with cottonwood galleries and irrigated crop and hay lands along the Milk River and major tributaries, dry-land agriculture and rangeland throughout the area, and two island mountain ranges (Bear Paws and Little Rockies). Landownership in this area consists of federal, state, and private lands, including the Fort Belknap Reservation and a portion of the Rocky Boy Reservation. In this drainage, the Milk River flows for 302 miles from Fresno Reservoir downstream to Hinsdale. There are several major tributaries to the Milk River located in this reach. Lodge, Battle, and Frenchman Creeks all originate in Alberta and Saskatchewan, Canada; whereas Beaver (Hill), Clear, Peoples, and Little Boxelder Creeks originate in the Bear Paw Mountains and Beaver Creek (Phillips) originates in the Little Rocky Mountains.

There are numerous reservoirs located throughout this area. Most of these reservoirs are generally too shallow to support perennial fisheries and are primarily used for stock and irrigation. The largest reservoirs by surface acreage are Nelson, Dry Fork, Beaver Creek, Anita, and Ester Reservoirs which receive high numbers of visitors for fishing and other recreational activities. Nelson Reservoir is managed as an irrigation storage facility by the BOR and can experience considerable drawdowns during prolonged drought cycles.

FISHERIES MANAGEMENT

This area is home to a number of fish species including, walleye, yellow perch, northern pike, black crappie, burbot, sauger, lake whitefish, goldeye, shorthead redhorse, smallmouth buffalo, bigmouth buffalo, black bullhead, bluegill, pumpkinseed, green sunfish, smallmouth bass, channel catfish, largemouth bass, Iowa darter, brassy minnow, stonecat, white sucker, longnose sucker, common carp, emerald shiner, spottail shiner, fathead minnow, brook stickleback, lake chub, northern redbelly dace, longnose dace, western silvery minnow, and western silvery/plains minnow. Species such as rainbow trout, brown trout, brook trout, and mountain sucker are found in the headwaters of Clear Creek and Beaver Creek. Brook trout are also found in some of the headwater streams located in the Little Rockies.

Nelson Reservoir is managed as a multi-species fishery with an emphasis on walleye management that promotes healthy walleye growth and favorable recreational catch rates. Since 2004, Nelson Reservoir has been annually stocked with 100,000 walleye fingerlings to augment the existing, wild population. Walleye fingerlings stocked from 2007-2017 were OTC marked to evaluate survival of stocked walleye and quantify contributions of wild walleye. Based on this analysis, survival of stocked walleye in Nelson Reservoir was determined to be variable, ranging from 11% to 43%. On average, 25% of the walleye collected during fall netting surveys from 2007-2017 were identified as hatchery reared fingerlings. This evaluation identified that a variable number of stocked walleye are surviving and recruiting into the population and identifies the contribution of natural reproduction of walleye to the Nelson Reservoir fishery.

Average annual walleye relative abundance observed during fall surveys shows little change in walleye abundance pre and post stocking of hatchery walleye. From 1991-2004, average walleye abundance in Nelson was 12.5 walleye/net. Since 2005, when annual walleye stocking of 100,000 walleye fingerlings was initiated, walleye abundance has increased only slightly to 13.4 walleye/net. Since the early 1990's, walleye abundance in Nelson has remained stable, even during extreme water drawdown events that occurred from 2000-2002 and again from 2015-2017. Walleye stocking in Nelson will continue as walleye growth, relative weight and age structure of the population remain strong. Forage populations in Nelson are more diverse than those in Fresno Reservoir and appear more resilient to extreme water level fluctuations.

FWP will continue to work with BOR on water level management that emphasizes the importance of inundation of key spawning and rearing habitats and the importance of natural reproduction of the multi-species fishery.

Very little information has been obtained identifying the species composition, densities, interactions, and habitat use of native and non-native fishes within the Middle Milk River. Therefore, development and implementation of a standardized sampling program targeting multiple habitats with maximum efficiency will aid in addressing some of these questions.

Smaller reservoirs located throughout the area are managed for diversity, recreational opportunity. Many of these waters are monitored every one to five years, based on angler use. Trap and transfer of warm-water species such as yellow perch, bluegill, black crappie, and fathead minnows is used to establish new fisheries, promote kids fishing, establish a forage base, or to supplement existing populations. Hatchery reared rainbow trout and largemouth bass are stocked into those ponds that have traditionally received them and exhibit good overwinter water conditions. Ponds and reservoirs will be re-stocked following severe drought events or winterkills. Windmill aeration systems are maintained on those ponds with marginal depths and low winter dissolved oxygen levels.

Angling opportunities occur year-round with anglers typically targeting the rivers and streams during the spring and shifting to ponds and reservoirs from late spring through winter. Shore, boat, and ice fishing opportunities exist throughout the area with anglers using a variety of methods to catch multiple species.

HABITAT

The Middle Milk is one of the most impacted sections of river in Montana. There are eight in-stream dams/diversions used to divert water for irrigation and municipal use that are barriers to fish passage. Fish passage issues also exist in the larger tributaries, with a dam located on Frenchman Creek (Frenchman Dam). Current budgets and staffing limit FWP's ability to identify and evaluate areas that restrict fish passage. Involvement with the 310 and SPA 124 permitting programs is often the only opportunity for biologists to interact with landowners and recommend best management practices on stream altering projects and voice opposition to projects that degrade aquatic habitats. Furthermore, budgets and staffing limitations preclude actively identifying stream bank stabilization and riparian enhancement projects.

Nelson Reservoir is an off-stream storage facility that draws water from the Milk River and has water levels that are relatively stable, except during extreme drought, compared to other

reservoirs within the area. Ensuring stable or rising reservoir levels during critical spawning and rearing periods allows this fishery to maintain balanced predator-prey densities and good growth rates.

Riparian habitats associated with smaller reservoirs vary depending on current rotational grazing plans and fencing. Water quality also varies based on surrounding land practices, depth, and seasonal climate. Working with federal agencies (e.g., BLM) to implement riparian fencing and off-site watering projects for livestock improves riparian habitats and increases the aesthetic values surrounding these small reservoirs.

FISHING ACCESS

The Middle Milk River is surrounded by private lands and access can be limited. There are three Fishing Access Sites (Fresno Tailwater FAS, Alkali Creek, and Bjornberg Bridge) and a number of bridges anglers can use to access the Milk River and streams. Access to the BOR managed Nelson Reservoir is good, with camping areas and two concrete boat ramps located near the dam and East shoreline. Fishing Access Sites are also located at Bear Paw Lake FAS, Cole Ponds FAS, and Faber Reservoir FAS, giving anglers a diverse fishing opportunity on some smaller bodies of water. The Region 6 pond guide will continue to be updated and distributed to anglers to increase awareness on local pond opportunities located on state, federal, and private lands. Access and opportunity will continue to be a major emphasis throughout the area.

SPECIAL MANAGEMENT ISSUES

Fishing Tournaments

Currently, one ice fishing tournament is held on Nelson Reservoir annually. Tournament dates must be finalized with the BOR prior to completion of the permit application issued by FWP. Tournaments will be reviewed on an individual basis. Evaluation of proposed tournaments will include potential biological and social impacts. Each tournament undergoes a 30-day public review and comment period. Tournament directors will be required to report post-tournament catch-rate information in a standardized format.

Milk River Water Management

The St. Mary canal and existing infrastructure is approaching 100 years of age and is in need of major repairs. The St. Mary's Working Group is working on a plan to update and repair the existing infrastructure to ensure supplemental water continues to replenish an overused Milk River watershed. The Bureau of Reclamation has finished a recent trans basin study and identified future climate change and highly variable water supplies being the biggest factors limiting all users in the next 40 years.

FISHERIES MANAGEMENT DIRECTION FOR MIDDLE MILK RIVER DRAINAGE

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Milk River - Fresno Reservoir tailwaters to Hinsdale	302 miles	Walleye, Northern pike, Yellow perch, Black crappie, Lake whitefish, Sauger (N), Channel catfish (N), Burbot (N)	Wild	General	Develop and implement a standardized sampling program to monitor sport fish populations. Better understand entrainment losses of all fishes through diversion canals and intake structures.
		Native non-game fishes (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue to stock 4,000 rainbow trout into the Fresno Tailwaters annually.
Habitat needs and activities: Work with local, state, and federal agencies along with landowners to implement best management practices that improve or maintain natural riverine habitats.					
Beaver Creek Section 03 and 04- Bear Paw Lake headwaters to East Fork Dam tailwaters	12 miles	Brook trout, Rainbow trout	Wild	General	Manage for self sustaining brook trout fishery. Develop and implement a standardized sampling program to understand fish assemblage and population size.
Habitat needs and activities: Work with Beaver Creek County Park to implement best management practices that improve or maintain natural riverine and riparian habitats.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek Section 02- Beaver Creek Reservoir headwaters to Bear Paw Lake tailwaters.	8 miles	Brown trout	Hatchery	Put, Grow and Take	Stock 2,000 brown trout annually for put and take trout fishery.
		Rainbow trout, Brook trout, Walleye, Northern pike, Yellow perch, Smallmouth bass	Wild	General	Develop and implement a standardized sampling program to understand fish assemblage and population size.
Habitat needs and activities: Work with Beaver Creek County Parks to implement best management practices that improve or maintain natural riverine and riparian habitats.					
Bear Paw Lake	45 acres	Rainbow trout	Hatchery	Put, Grow and Take	Stock 20,000 rainbow trout annually for put and take trout fishery.
		Brook trout, Smallmouth bass	Wild/Hatchery	General/ Restrictive Regulations	Manage for self-sustaining brook trout and smallmouth bass population.
		White sucker	Wild	Suppression	Continue annual efforts to trap and remove adult white suckers to lower densities.
Beaver Creek Section 01- Confluence of Milk River to Beaver Creek Reservoir tailwaters.	22 miles	Brown trout	Hatchery	Put, Grow and Take	Stock 3,000 brown trout annually for put and take trout fishery.
		Rainbow trout, Brook trout, Walleye, Northern Pike, Yellow Perch, Smallmouth bass	Wild	General	Develop and implement a standardized sampling program to understand fish assemblage and population size.
Habitat needs and activities: Work with local, state, and federal agencies along with landowners to implement best management practices that improve or maintain natural riverine habitats.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Beaver Creek Reservoir	160 acres	Rainbow trout, Walleye	Hatchery	Put, Grow and Take/ Restrictive Regulations	Stock 50,000 rainbow trout annually for put and take trout fishery. Evaluate current walleye stocking programs success. Implement a walleye stocking strategy that optimizes stocked walleye recruitment and relative abundance while maintain a good forage base.
		Northern pike, Yellow perch, Smallmouth bass, Brook trout	Wild	General	Continue to monitor these populations as well as evaluate the biological and social impacts regarding a black crappie introduction into the reservoir.
Habitat needs and activities: FWP has requested that reservoir water levels remain stable to slightly increasing during the spring spawning period (April-May).					
Clear Creek	40 miles	Walleye, Northern pike, Yellow perch, Sauger (N)	Wild	General	Better understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
		Brook trout	Wild	General	Manage for self-sustaining brook trout fishery.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Lodge Creek, Battle Creek	62 miles, 70 miles	Walleye, Northern pike, Black bullhead, Sauger (N), Yellow Perch	Wild	General	Better understand fish assemblage and population size of game fishes.

Continue next page

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to install safe water crossings which emphasize fish passage and water connectivity.					
Peoples Creek	70 miles	Walleye, Northern pike, Black bullhead, Yellow perch	Wild	General	Better understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
		Brook trout	Wild	General	Manage for self-sustaining brook trout fishery.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Dry Fork Reservoir	350 acres	Walleye	Hatchery	Put, Grow and Take	Stock 10,000 walleye fingerlings biennially.
		Northern pike, Yellow perch, Black crappie	Wild	General	Maintain a quality fishing experience for all species. Continue to monitor the population.
Habitat needs and activities: Look to minimize irrigation impacts on pool elevations.					
Ross Reservoir	6 acres	Yellowstone cutthroat trout	Hatchery	Put, Grow and Take	Maintain current harvest opportunity
Faber Reservoir	38 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage for put and take rainbow trout fishery. Get feedback from anglers on possibly introducing black crappie.
Brookie Pond	4 acres	Rainbow trout	Hatchery	Put, Grow and Take	Maintain current harvest opportunity
Habitat needs and activities: Maintain windmill aerator.					
Frenchman Creek	78 miles	Walleye, Northern pike, Black bullhead, Yellow perch	Wild	General	Better understand fish assemblage and population size of game fishes.

Continue next page

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Beaver Creek (Phillips County)	78 miles	Walleye, Northern pike, Black bullhead, Yellow perch	Wild	General	Better understand fish assemblage and population size of game fishes.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat and provide passage where applicable.
		Brook trout	Wild	General	Manage for self-sustaining brook trout fishery.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Nelson Reservoir	4,331 Acres	Walleye, Northern pike, Yellow perch, Black crappie, Lake whitefish, Smallmouth bass, Channel catfish (N)	Wild/Hatchery	General/ Put, Grow and Take	Evaluate current cost/benefits of walleye stocking program as it relates to walleye abundance, growth, and condition. Manage for sustainable walleye, northern pike, and yellow perch fishery year-round. Evaluate the rising smallmouth bass densities and its effects on the existing fish community.
Trout Ponds-Located throughout Hill, Blaine, and Phillips Counties	Various	Rainbow trout, Brook trout	Hatchery	Put, Grow and Take	Monitor water conditions and impacts from winterkill. Stock trout based on current 6-year stocking plan.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths.					

Water	Miles/Acres	Species	Recruitment Source	Management Type	Management Direction
Warm water Reservoirs and Ponds- Located throughout Hill, Blaine, and Phillips Counties	Various	Largemouth bass, Northern pike, Walleye, Smallmouth bass, Channel catfish (N), Black crappie, Yellow perch, Bluegill	Wild/Hatchery/ Transfer	General/ Put, Grow and Take	Manage as self-sustaining fisheries. Supplement populations with hatchery stocking and wild fish transfers as needed. Monitor water conditions and impacts from winterkill.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths.					


Lower Milk River Drainage
MONTANA FWP
Coal Creek
Butte Creek
West Fork Poplar River
Police Creek
Frenchman Creek
Rock Creek
Willow Creek
Middle Fork Porcupine Creek
West Fork Porcupine Creek
Stinky Creek
Frenchman Reservoir
Whitewater Creek
Buggy Creek
East Fork Little Porcupine Creek
Cottonwood Creek
Middle Fork Wolf Creek
Nelson Reservoir
Beaver Creek
East Fork Porcupine Creek
FORT PECK INDIAN RESERVATION
Cherry Creek
Little Porcupine Creek
Todd Lakes
2
Milk River
Porcupine Creek
Antelope Creek
Glasgow
Mahan And Hoyt Reservoir
Vr-2 Reservoir
Little Beaver Creek
Beaver Creek
Fort Peck Powerhouse Tailrace
Fort Peck
Frazer Lake
Drege Cuts
Flat Creek
Larb Creek
Triple Crossing Reservoir
Lone Tree Creek
Fort Peck Lake
Big Dry Creek
Buckley Lake
Timber Creek
Prairie Elk Creek
Willow Creek
Missouri River
Shade Creek
Fort Peck Lake
Fort Peck Lake
Tribal Lands
Drainage Boundary
N
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Area of Interest
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
10
20
Miles

LOWER MILK RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Lower Milk River drainage covers approximately 2,644 square miles, including the Milk River from Hinsdale downstream to its confluence with the Missouri River. The vast majority of the district is situated within Valley County, with the exception of the northwest most portion which lies within Phillips County. Significant tributaries include Rock Creek from the north and Willow creek from the south. Although the Milk River bottoms are mostly in private ownership, areas to the north and south include large tracks of BLM land as well as private lands. Along the Milk River irrigated croplands dominate the landscape with intact cottonwood galleries intermixed throughout. The areas to the north are a mix of dry land grain farming and native grass communities. Areas to the south also have dry land grain farming and native sagebrush habitats.

FISHERIES MANAGEMENT

The Milk River from Hinsdale to Vandalia Dam is greatly influenced by the complete fish barrier that Vandalia Dam has created. The richness of native fishes is greatly reduced when compared to sections downstream of Vandalia (Missouri River influence). One native species (channel catfish) and two introduced species (walleye and northern pike) dominate the fishery in this section. Other introduced game fishes including yellow perch, black crappie, bluegill and smallmouth bass are also found in this section. Although not considered a lake or a reservoir, Vandalia Dam backs water up approximately 9.35 miles to Hinsdale and boat fishing and water-based recreation is popular.

The fish populations of the Milk River downstream of Vandalia Dam are interconnected to the Missouri River, with high native and nonnative species richness. The abundance of both native and introduced fish can greatly vary on a seasonal or yearly basis depending on the river's discharge and the number of fish migrating upstream from the Missouri River. Game fish that occur in this section include channel catfish, sauger, walleye, shovelnose sturgeon, northern pike, burbot, lake whitefish, smallmouth bass, white bass and paddlefish. Non-game fish include (but are likely not limited to) pallid sturgeon, bigmouth and smallmouth buffalo, river carpsucker, blue sucker, white and longnose sucker, shorthead redhorse, freshwater drum, goldeye, stonecat, black bullhead, flathead chub, sicklefin chub, sturgeon chub, sand shiner, emerald shiner, spottail shiner, fathead minnow, brassy minnow, western silvery minnow, plains minnow and common carp.

The lower Milk River is a very important tributary to the Missouri River for fish recruitment. Studies have found that when the Milk River is flowing during the spring and early summer, countless fish of several species are produced and drift into the Missouri River. Paddlefish production in the lower Milk River occurs in years that the Milk has spring and early summer flows. In addition, blue suckers are known to enter the Milk River when flows are near 1,000 cfs and spawn, while in years where relatively little flow occurs blue suckers don't even enter the river. Furthermore, higher flows are required to scour silt from the bottom of the river into suspension and expose the many gravel bars--allowing fish like sauger and paddlefish to attach

their eggs. We continue to learn more about the importance of the Milk River and its significance to the Missouri River. Recent high-water events (2010, 2011, 2013 and 2018) and the migratory response by a variety of fishes including pallid sturgeon support enhanced funding to complete focused research, monitoring and habitat enhancement in this important fishery.

Fishing regulations in the lower Milk River are similar to that of the rest of the Eastern District, with the exception of paddlefish. Although paddlefish use the lower Milk in the spring and early summer, no fishing is allowed. This is because the size of the population and the amount of fishing pressure it can withstand is not fully understood. Furthermore, there is very limited public access on this portion of the river and spawning is sporadic and dependent on river discharge. Limited access not only makes fishing difficult but limits effective law enforcement.

Rock Creek is a relatively large tributary that enters the Milk River northwest of Hinsdale. Although the majority of angling likely occurs at its confluence with the Milk River, Rock Creek it has at least 14 species within the drainage, 12 of which are native species. Rock Creek continues to be popular with a number of commercial minnow collectors. Limited information is available on the possible impacts of this activity. Future studies should address the stainability of commercial minnow collection from this waterbody.

Several prairie ponds that provide public access are stocked with game fishes to provide fishing opportunities. The deeper ponds have been stocked with game fish that are meant to be self-sustaining, such as northern pike, yellow perch, white or black crappie, and largemouth bass. Shallower ponds that have a tendency to winter kill are often stocked with hatchery produced rainbow trout that are stocked either annually or biannually.

HABITAT

The upper section of the Milk River from Hinsdale to Vandalia Dam is shallower and has faster moving water, while the lower section consists of relatively deep slow-moving water, because of the influence of Vandalia Dam. The upper section has intact cottonwood galleries with intermixed agricultural fields to the river's banks.

The section downstream of Vandalia dam is very sinuous with a cottonwood gallery lining the majority of river with patches of agriculture adjacent to the river banks. Throughout most of the year the rivers bed is laden with silt substrate, but when the river flows increase in the spring, those sediments are put into suspension and gravel bars are exposed.

During the flooding of 2011 it was apparent how important an intact riparian zone is on the lower Milk River. Bank sloughing occurred at accelerated rates on lands butting up to agricultural field, with several areas witnessing severe erosion. Conversely, soils with intact riparian vegetation stayed relatively intact.

The largest single factor limiting the lower Milk River is the availability of water during the spring and early summer period. During years of drought, the lower Milk River is often stagnant, with flows approaching zero. From past research there is a good understanding of the relationship between spring and early summer flows and production of several species of native fishes, including game fishes like sauger and paddlefish. During wet years when the Milk River flows for extended periods, several species benefit by running up into the river from the Missouri River and spawning. The duration of flow is critical since once a fish has laid its eggs flows are

needed to keep those eggs oxygenated. If flows cease when eggs are incubating, silt will fall back out of the water column and can suffocate the eggs.

Good spring and early summer flows from the Milk River also positively influence native fish spawning within the Missouri River. During 2016 the Milk River had higher than normal flows due to the drawdown of Nelson Reservoir in Phillips County and above average rainfall within the Milk River Drainage. Flows from the Milk River significantly increased the Missouri River discharge during the spring through July. In addition, the Milk River inputs increased water temperature and the suspended sediment loads of the Missouri River. During that year, FWP observed higher than average paddlefish and shovelnose sturgeon production in the Missouri River. This observation is consistent with other years where the Milk River has higher than average discharge. While many of the 2016 paddlefish may have been produced in the Milk River, FWP has never captured a larval sturgeon in the Milk River, indicating that all shovelnose sturgeon come from the Missouri River. However, the production of shovelnose sturgeon in the Missouri River can be greatly influence by Milk River inputs.

Fishing Access

The majority of the lower Milk River flows through privately owned lands. However, some public lands do occur, particularly in the town of Hinsdale and at Vandalia Dam. From Vandalia Dam to its mouth, public access is mostly limited to county bridges. Addressing the lack of public access to the lower Milk River is a priority for FWP.

The prairie ponds within the district occur on a mix of private and public land. Private ponds stocked by FWP are accessible to the public by gaining permission from landowners. A region-wide pond booklet was published in 2011 and updated in 2013. This booklet provides recreationists with a guide to all ponds managed by FWP in Region 6. This booklet will be updated again in 2019 and as needed thereafter.

Special Management Issues

During 2010 and 2011, both wild adult and hatchery-reared pallid sturgeon migrated into the lower Milk River from the Missouri River. Additionally, in 2018 high spring discharge from the Milk River significantly increased the total flow of the Missouri River. During this period, several adult pallid sturgeon migrated out of the Missouri River below the Missouri and Yellowstone River confluence upstream to areas near the mouth of the Milk River. Attraction flows for pallid sturgeon are extremely important to getting fish to spawn as far from Lake Sakakawea as possible due to their extended free-embryo drift phase. Milk River flows in combination with Missouri River flows from the Fort Peck project can be used to trigger this long migration.

The Milk River greatly influences the temperature and suspended sediment load of the Missouri River during high flows, due to the fact that low volumes of cold, clear water are typically released from Fort Peck Dam. These physical changes in the Missouri River were observed during 2010 when the Milk River had flows of approximately 6,000 cfs for two extended periods during the spring into the early summer. These flows not only produced fish like paddlefish and sauger in the Milk River, but also contributed to the largest year class of shovelnose sturgeon produced in the Missouri River in recent history. Similarly, during the historic water year of

2011, at least five adult wild pallid sturgeon migrated up the Milk River. This was the second consecutive year that adult pallid sturgeon where in the Milk River. The 2011 migration included a prolong period where pallid sturgeon remained near the confluence with the Milk River throughout the spawning season.

During 2016, the Milk River discharge was significantly higher than average during the spring and early summer months due to the drawdown of Nelson Reservoir. These flows produced high numbers of shovelnose sturgeon, which were produced in the Missouri River. This is further evidence that the Milk River can greatly increase production of native fishes spawning in the Missouri River. Although at this point we have no evidence that pallid sturgeon have successfully spawned in the Milk River, its effects on the biotic and abiotic features of the Missouri River are significant and should not be overlooked. Therefore, water management in the Milk River could have implications in managing the restoration of pallid sturgeon in the Missouri River.

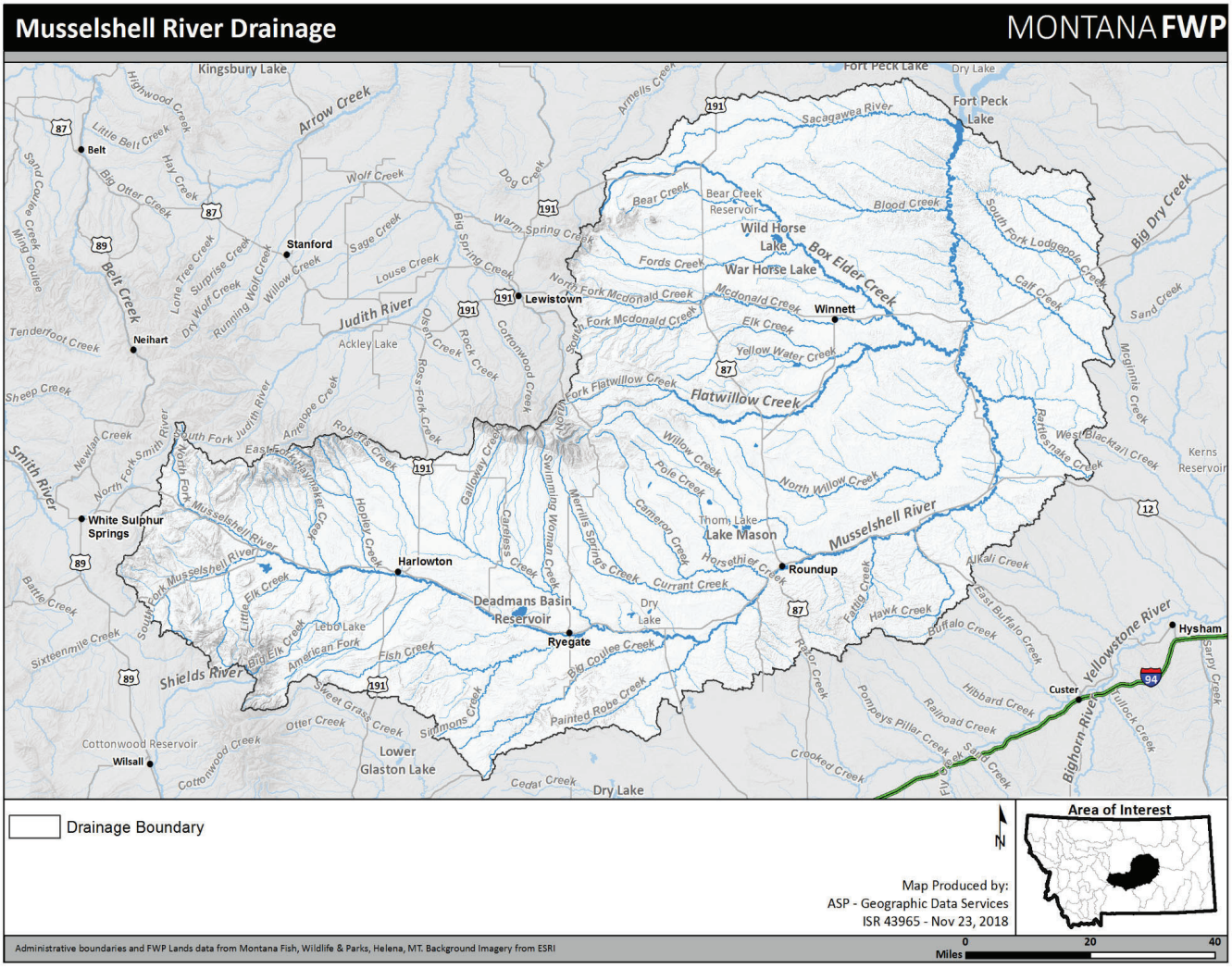
Native Species Conservation

Several native species that are listed as State Species of Special Concern are found within the lower Milk River Drainage. Many species such as sauger, paddlefish, pallid sturgeon and blue suckers are tied to the mainstem Milk and Missouri rivers. Ongoing research and surveys occur on the lower Milk River and mainstem Missouri River, however few surveys occur within the smaller tributaries to the Milk River. Montana State University surveyed many of the small tributaries in the early 2000's, but very little follow up has occurred. Future surveys could be compared to past work to better understand how native species are faring in this drainage.

FISHERIES MANAGEMENT DIRECTION – LOWER MILK RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Milk River (Hinsdale to Vandalia Dam)	16 miles	Channel catfish (N), Sauger (N), Walleye, Northern pike	Wild	General	Monitor populations for sport fishing. Continue to better understand channel catfish population dynamics.
		Native non-game fishes (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance.
Milk River (Vandalia Dam to Missouri River)	117 miles	Pallid sturgeon (N)	Wild/ Hatchery	Conservation	Restore a self-sustaining population of pallid sturgeon in the Missouri River. Work towards modifying operations at Fort Peck Dam that are beneficial for spawning and growth.
		Channel catfish (N), Sauger (N),	Wild	Conservation	Monitor populations to be certain that over exploitation does not occur. Maintain habitat for all life stages. Study channel catfish population dynamics. Better understand spawning requirements of sauger.
		Paddlefish (N)	Wild	Restrictive Regulations	Better understand spawning requirements of paddlefish.
		Northern Pike, Walleye, Smallmouth bass, Yellow perch, Black crappie	Wild	General	Low level effort to monitor populations through native game fish surveys. Allow sustainable harvest.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Native non-game fishes (N)	Wild	Conservation	Monitor populations to detect changes in species composition and abundance. Better understand the relative contribution of Milk River fishes to the Missouri River
Rock Creek	93 miles	Channel catfish (N), Sauger (N)	Wild	General	Maintain numbers. Inventory habitat issues, such as fish passage barriers and unscreened diversions.
		Native non-game fishes (N)	Wild	Conservation	Protect habitat for native fishes. Provide fish passage at stream crossings.
Prairie Ponds	Various	Yellow perch, Largemouth bass, Northern pike	Wild/ Transfer	General	Continue to monitor these populations and stock fish when necessary. Look for opportunities to increase the quality of habitat by increasing the depth of reservoirs, building new reservoirs, etc.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue to stock prairie ponds with put and take fisheries. Evaluate angler use and which ponds should be stocked. Look for opportunities to improve habitat where applicable.


Musselshell River Drainage
MONTANA FWP
Kingsbury Lake
Fort Peck Lake
Dry Lake
Fort Peck Lake
Arrow Creek
Highwood Creek
Little Belt Creek
Belt
Big Otter Creek
Hay Creek
Sand Coulee Creek
Ming Coulee
Wolf Creek
Dog Creek
Armells Creek
Sacagawea River
Bear Creek
Bear Creek Reservoir
Blood Creek
Wild Horse Lake
War Horse Lake
Box Elder Creek
South Fork Lodgepole Creek
Big Dry Creek
Calf Creek
Sand Creek
Mcginnis Creek
Stanford
Sage Creek
Warm Spring Creek
Big Spring Creek
Louse Creek
Belt Creek
Lone Tree Creek
Surprise Creek
Dry Wolf Creek
Running Wolf Creek
Willow Creek
Judith River
Lewistown
Fords Creek
North Fork Mcdonald Creek
Mcdonald Creek
Winnett
Elk Creek
Yellow Water Creek
Fork Mcdonald Creek
Neihart
Tenderfoot Creek
Ackley Lake
Olsen Creek
Rock Creek
Cottonwood Creek
South Fork Flatwillow Creek
Flatwillow Creek
Sheep Creek
Antelope Creek
Ross Fork Creek
Robinson Creek
Newlan Creek
South Fork Judith River
North Fork Smith River
Smith River
Galloway Creek
Willow Creek
Pole Creek
North Willow Creek
Rattlesnake Creek
West Blacktail Creek
Kerns Reservoir
Merrills Springs Creek
Swimming Woman Creek
Thorn Lake
Lake Mason
Musselshell River
White Sulphur Springs
Harlowton
Hopley Creek
Cardess Creek
Camero Creek
Horsethief Creek
Roundup
Currant Creek
Alkali Creek
Battle Creek
Deadmans Basin Reservoir
Dry Lake
Fattig Creek
Hawk Creek
East Buffalo Creek
Buffalo Creek
Sixteenmile Creek
Little Elk Creek
Big Elk Creek
Lebo Lake
American Fork
Fish Creek
Ryegate
Big Coulee Creek
Razor Creek
Hysham
Yellowstone River
Sarpy Creek
Custer
Shields River
Sweet Grass Creek
Otter Creek
Simmons Creek
Painted Robe Creek
Hibbard Creek
Pompeys Pillar Creek
Railroad Creek
Tullock Creek
Bighorn River
Cottonwood Reservoir
Wilsall
Cottonwood Creek
Lower Glaston Lake
Crooked Creek
Cedar Creek
Dry Lake
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
20
40
Miles

MUSSELSHELL RIVER DRAINAGE

PHYSICAL DESCRIPTION

The Musselshell River headwaters start at approximately 9,200 feet elevation and converge with the Missouri River and Fort Peck Reservoir at 2,200 feet. The Musselshell flows from the confluence of the North and South forks (near the Wheatland and Meager county border) for nearly 340 miles. The North Fork flows nearly 32 miles, and the South Fork flows nearly 31 miles. The drainage area covers approximately 8,000 square miles and includes 7,601 surface acres of lakes or reservoirs within 36 individual waterbodies. Detailed fisheries studies from 1979 through 1986 divided the Musselshell into three zones, coldwater, transitional, and warmwater. The coldwater zone extends from the confluence of the North and South forks of the Musselshell near Martinsdale, to Barber (river mile 336 to 256). The transitional zone begins at Barber and extends to Roundup (river mile 256 to 180). The warmwater zone begins at Roundup and extends to its confluence with the Missouri River (river mile 180 to 0). Additionally, the tributaries in the coldwater zone are almost all dominated with coldwater fish species, while tributaries in the transitional and warmwater zones often start out with coldwater species then transition to warmwater species in the lower reaches.

Coldwater Zone

The coldwater zone of the Musselshell River is influenced by several tributaries in addition to the North and South forks. Major tributaries on the North Fork include Checkerboard and Spring creeks. Major tributaries to the South Fork include Alabaugh and Cottonwood creeks. Cottonwood Creek is a popular trout fishery on USFS lands with a fairly accessible mountain lake (Forest Lake). Tributaries downstream from the forks include Daisy Dean, Little Elk, Haymaker, Big Elk, Hopely, Antelope, Lebo, and American Fork creeks along with several smaller creeks. The average width of the Musselshell River in this zone in 1979 was reported to be 60 feet with a gradient of 20.5 feet per mile. Musselshell River substrates are dominated by gravels and cobble in this zone. This zone contains several irrigation storage reservoirs, which alter the natural hydrograph. Major reservoirs include, Bair Reservoir on the North Fork, Martinsdale, an off-channel reservoir on the South Fork, and Deadmans Basin an off channel reservoir on the mainstem. These three reservoirs store a combined volume of approximately 106,616 acre feet of water at full pool. Eleven irrigation diversions are found in the North Fork, South Fork, and mainstem of the Musselshell River, and are capable of diverting a total of 1,400 cfs. of water. Uncounted stock dams, smaller diversion dams and other obstructions are found in the tributary streams in this zone. The physical alterations to the river from water storage practices and irrigation infrastructure have been both beneficial and detrimental to fish populations in this reach. Some structures prevent upstream passage for fish and others, while passable, remove large quantities of water which severely limit in-channel water downstream of the diversions. Conversely, the storage reservoirs often deliver water back to the river for irrigation demands in the summer, which can help maintain some fisheries in periods of drought. Water quality is sometimes a concern in the Musselshell. Land use is dominated by grazing mixed with hay and crop land, and some riparian areas are severely degraded with loss of willow and cottonwood. Agricultural runoff and irrigation returns can increase salinity, nutrient levels

and sediment load, which increase water temperature and turbidity, and decrease dissolved oxygen. Water chemistry data indicate these influences occur throughout the Musselshell watershed starting in the upper reaches and are compounded downstream.

Transition Zone

The transition zone of the Musselshell is influenced by several tributaries including Fish, Careless, Big Coulee, Painted Robe, Dean, Currant, Goulding, Pole, and Halfbreed creeks. The tributaries in this reach are prone to dewatering and are normally dry or intermittent during irrigation season. The average width of the Musselshell River in this zone in 1979 was reported as 85 feet with a gradient of 6.6 feet per mile. The gradient is about a third of that in the coldwater section. Substrate in this section is characterized by gravels, sand, silt, and isolated sandstone rock slabs along sandstone cliffs.

Storage reservoirs are not found in this zone, although water releases from Deadmans Basin via a canal ultimately returns water into Careless Creek which is part of this zone. At least 10 irrigation diversions are found in this zone (four major diversions have been reported to be capable of diverting a total of 200 cfs), and several additional rock weirs appeared to be in place to raise the river stage for irrigation pumps. A few of the larger diversions were breached or flanked during the 2011 flood, with several still not repaired or replaced in spring of 2012. As of 2018, one diversion was removed with two flanked by the river but left in place. The physical alterations in this zone may seasonally preclude fish passage, and because the diversions lack screens, many fish are carried onto fields each year or trapped in canals and siphons when they are dewatered each fall. Water quality issues exist in this zone due to irrigation returns that increase salinity (sodium sulfate) and cause nutrient enrichment. Changes in operational releases of water from Deadmans Reservoir through Careless Creek have reduced, but not eliminated, these effects. The dewatering for irrigation purposes in this zone reduces the fishery potential by reducing available habitat.

Warmwater Zone

The warmwater zone of the Musselshell River is influenced by several tributaries: Willow, Flatwillow, Box Elder, Fattig, Hawk, Rattlesnake, Calf, and Lodgepole creeks, in addition to several small intermittent drainages. The average width of this zone in 1979 was reported as 100 feet, with an average gradient of 3 feet per mile, which is half of the transition zone's average gradient. Substrates in this zone are dominated by silt and sand, with some interspersed gravels and bedrock. Five major irrigation diversions have been reported to be capable of diverting a total of 418 cfs. Flatwillow Creek is the largest tributary in the warmwater zone. Petrolia Reservoir, an on-stream irrigation reservoir on Flatwillow Creek that has approximately 9,000 acre feet of storage, severely limits flow immediately downstream in Flatwillow Creek during low-water periods. At least seven dams can be found from Roundup to the Davis/Korenco Dam, three miles downstream of the town of Musselshell. In the spring of 2018 the uppermost diversion in this section was flanked and buried in sediment; future efforts may be made to remove this dam. No other major dams or diversions are known on the river from this point to the confluence with the Missouri River. Physical alterations to the river by diversion dams and check dams have fragmented the river during the periods outside of spring high flows. The Delphia Melstone Dam at Musselshell and the Davis/Korenko Dam downstream have been shown to preclude fish passage on a regular basis. Channel catfish and smallmouth bass were

documented moving upstream of the Delphia Melstone Dam, but the movements were made during higher than average water events and population surveys have not found substantial populations of game fish species above this dam. Other upstream dams also have the ability to reduce upstream passage of fish into the transition zone.

FISHERIES MANAGEMENT

Over 42.5 million fish were stocked in the Musselshell watershed by FWP from 1928 to 2009. An additional 3.8 million fish were stocked from July 1, 2009 through June 31, 2018. The most commonly stocked species has been rainbow trout with over 29.5 million individuals totaling more than 1.04 million pounds stocked. Many of these have been stocked in major reservoirs in the drainage such as Martinsdale, Bair Reservoir, Deadman's Basin, Lebo, and Yellow Water. Essentially all stocking of trout directly into the river was halted by 1980. Stream stocking accounted for many of the rainbow trout from 1928 through 1982. Most rainbow trout recently found in the river are from reservoir stockings. Westslope cutthroat trout stocked into Bair Reservoir recently were found pioneering the river below the dam. From 2009 to 2018 65,167 westslope cutthroat trout were stocked into Bair Reservoir, Castle Lake, and Martinsdale Reservoir. Other species stocked in the drainage from 2009 to 2018 include tiger muskie, largemouth bass, brook and brown trout, and kokanee salmon.

Coldwater Zone

The coldwater zone and associated tributaries support many species of fish such as brook trout, brown trout, rainbow trout, Yellowstone and westslope cutthroat, mountain whitefish, longnose dace, Rocky Mountain sculpin, longnose, shorthead redhorse, white, and mountain suckers, occasional fathead minnows, flathead chubs, common carp, stonecat, lake chub, northern redbelly dace, and northern redbelly x finescale dace hybrids. The mainstem supports a good population of brown trout (comprising about 96% of the total trout) and mountain whitefish, while the tributaries support brook trout (about 56% of the total trout), and lesser numbers of rainbow and brown trout, mountain whitefish, and both species of cutthroat trout. Brown trout are also the most common species in much of the North and South forks. Arctic grayling (native to Montana, but not the Musselshell watershed) were stocked in the upper reaches of the South Fork of the Musselshell in two separate ponds in 1961; however, records indicate neither introduction became self -reproducing.

Brown trout population estimates have been completed at the Selkirk Fishing Access Site on an irregular basis since 1984. Current management plans are to conduct population estimates at this site once every 3 years. Many of the estimates attempted between 2001-2008 were not completed, as recapture rates were low and the population consisted of a few larger adults and more abundant, but still relatively few juveniles. The poor population structure during this time was related to poor in-stream flow conditions during a drought. Brown trout population estimates ranged from a low of 17 total fish caught in an electrofishing effort to estimates of 890 brown trout per mile in 1992, which was attributed to a good spawn in 1991. Estimates were conducted in 2010, 2012, 2014, and 2017 with a range from 188 brown trout per mile in 2017 to 910 in 2012. Overall, average density for years with estimates from 1984 through 2017 was approximately 360 brown trout per mile.

Stream angling pressure in this zone is low. The FWP Angler Survey indicated the Musselshell River riverine section in 2009, 2011, 2013, and 2015 was 2,1216, 776, 2,349, and 1,342 angler days, with an additional 430 angler days in the North and South forks of the river. The major reservoirs receive moderate angling effort. During the same time period Bair reservoir pressureranged from 1,349 to 3,178 angler days, Martinsdale from 7,373 to 13,630 angler days, and Deadmans Basin from 3,766 to 6,568 angler days. Fishing pressure estimates are available in the bi-annual Angler Survey for Chief Joseph pond, North and South Forks, Big Elk Creek and other smaller waters in this section.

In 2015, the Deadmans Diversion and canal headgates were reconstructed as a result of age and damages from the 2011 flood. The new diversion has a rock ramp structure to improve fish passage at this site. The design was to improve passage for native minnows and other fish including northern redbelly dace, white sucker, and brown trout. The range of swimming velocities it was designed to meet should allow nearly all species to pass when water is moving through the ramp. At times water passing the diversion is going entirely through the sediment gate rather than over the dam.

Transition Zone

The transition zone supports at least 17 species of fish, but the abundance of sport fish is generally reported as low. Documented species include stonecat, several minnow species (carp, fathead minnow, flathead chub, lake chub, longnose dace, and western silvery minnow), several sucker species (longnose, mountain, river carpsucker, and shorthead redhorse), smallmouth bass, brown trout and mountain whitefish. Additionally, Deadmans Basin Reservoir which is geographically in this zone but reported in the coldwater zone, contains stocked populations of rainbow trout, kokanee salmon, and tiger muskie. Atlantic salmon and coho salmon have also been stocked into Deadmans Basin, however those species are no longer in the reservoir or river. It is likely some catfish and sauger (at times of high water) are in this zone near Roundup, but they have not been reported in any survey from 1979 to present. Discussions with longtime anglers indicated sauger and catfish were more common in the 1950s and 1960s as far up as Lavina. Brown trout are found in the upper transition zone along with an occasional rainbow trout however in numbers much lower than those in the coldwater zone.

Warmwater game fish densities in this zone may be attributed to irrigation diversions inhibiting movements. The warmer river sections would likely provide good habitat for channel catfish if they could migrate upstream past existing barriers. Sauger would likely be found in this zone each spring, migrating back to the warmwater zone and Missouri River by midsummer if existing dams were passable. Food is not likely limiting, as forage fish populations found in this section of river are strong enough to support higher abundances of predatory fish than are currently found.

Smallmouth bass were stocked from 1977 to 1981 from Lavina to Roundup. This population didn't expand very quickly, and many of these stocked bass were later found downstream of the transition zone in the warmwater zone, ultimately starting the smallmouth bass fishery in Fort Peck Reservoir. Nonetheless, limited recruitment was documented, and the bass that were found in the transition zone were documented as showing some of the fastest growth rates for bass in Montana. Smallmouth bass have been caught as far up as Lavina, but good populations are not found until Roundup. The Lavina Diversion appears to be a good barrier for upstream

movement. Survey work near Lavina and Roundup show the smallmouth bass fishery continues to provide opportunity and has persisted since the initial stockings.

Deadmans Basin Reservoir is included in the transition zone because return water enters in the transition zone through the Barber Canal and Careless Creek. Any fish that move out of the reservoir could reach the river, however notable populations of rainbow trout, kokanee salmon, and tiger muskie have not been documented in the transition zone. The reservoir provides habitat for white, shorthead redhorse, and longnose suckers, carp, as well as a limited number of minnow species that enter the reservoir through the Deadmans canal. The Deadmans fishery relies heavily on a stocking program for rainbows, kokanee and tiger muskie. Without stocking, this reservoir would provide a limited fishery for brown trout that come from the coldwater zone via the Deadmans canal system.

The Musselshell River in the transition zone and warmwater zone received between 2,059 to 3,965 angler days of use annually between 2009 and 2015.

As a result of flood damages in 2011 and efforts with the Musselshell Water Coalition and various landowners, government programs, and FWP programs several stream habitat improvements occurred. Below Lavina, the Egge Diversion was removed, the Anderson Diversion was flanked and abandoned at this time. The Parrot Diversion remains a passage barrier and provides a second barrier for potential pike movement from downstream. The Naderman Diversion was flanked and abandoned downstream with the primary barrier Stella Diversion still in place and functioning. Assistance to irrigators was provided by FEMA and NRCS to transition from the diversions to pump irrigation. The Stella Diversion is the first barrier in the transition zone for fish to move upstream. There are several other downstream diversions in the warmwater zone.

Catfish captured in the warm water zone were introduced into the lower reach of the coldwater zone to encourage re-colonization in the transition and upper warmwater zones in 2015. In 2016, a second wild transfer was conducted with the fish stocked several miles downstream of Ryegate. Expansion of open reaches of river in this zone in combination with improved water delivery for downstream water rights from Deadman's Basin Reservoir may provide improved conditions for catfish to persist in this reach. Future transfers may be conducted to add genetic diversity to the small number of original catfish transferred.

Warmwater Zone

Despite severe dewatering problems, high temperatures and poor water quality, the warmwater zone still contains a nearly intact native fish ecosystem. The warmwater zone has been documented to support at least 31 species of fish. This species list includes catfish (black bullhead, channel catfish, and stonecat), minnows (brassy minnow, carp, emerald shiner, fathead minnow, flathead chub, longnose dace, plains minnow, sand shiner, spottail shiner, and western silvery minnow), suckers (longnose sucker, blue sucker, mountain sucker, river carpsucker, shorthead redhorse, smallmouth buffalo, bigmouth buffalo and white sucker), walleye, sauger, black crappie, bluegill, green sunfish, smallmouth bass, burbot, freshwater drum, goldeye, and northern pike. Many of these species are not found at Roundup, but most are found below the Delphia-Melstone Diversion Dam at the town of Musselshell. Unverified reports of paddlefish being found in a field near Melstone were made as the flood waters of 2011 receded. FWP

reported angling pressure of 2,360 angler days for the lower 80 miles of river in 1963. In 2015, the pressure was estimated to be 2,0593,965 angler days. From 2011 to 2015 the angler survey reports a range of fishing pressure from 2,059 to 2,447.

HABITAT

Habitat issues in this area include habitat fragmentation from irrigation structures, meander cutoffs from railroad and road projects, with an illegal cuttoff initiated in 2017 that was required to be filled but high water in 2018 removed the loose soils activating the cuttoff, and near dewatering of the Musselshell River. Channel instability due to a railway bed and highway projects cutting off meander bends has caused loss of habitat for fish. The flood of 2011 changed many sections of river by creating cutoffs and, in some cases, breaching the abandoned railroad berm, re-establishing some bends as well as flanking and bypassing several irrigation structures which reopened fish passage. Recent down-cutting of the channel has reduced channel length in the Musselshell River by about 8% for its full length and about 21% below Flatwillow Creek. Channel widening associated with the 2011 flood will strongly influence fish habitat. Dozens of miles of abandoned channel may also play an important role in the prairie stream and riparian ecosystem. The floodwaters of 2018 also widened the channel and contributed to additional oxbow development reducing the length of the river. Montana Department of Transportation has had several large riprap projects in this area to protect highway infrastructure that may also compromise stream function.

Over the past decade, the water judge, the Musselshell Distribution Project, and efforts of the Musselshell Water Coalition, have resulted in more water being conveyed in the main channel compared to the transition and warmwater zones. Additional water rights for instream flow would further improve conditions.

Coldwater Zone

Wetted perimeter analysis above Harlowton determined that 80 cfs is necessary to sustain a consistently high-quality wild brown trout fishery in the coldwater section. Bankfull flow near Martinsdale was approximated to be 1,060 cfs at a two-year recurrence interval, which typically occurs in June. The 1.25 year recurrence flow was reported as 514 cfs. These studies recommended a flow of 1,060 cfs be allowed to occur for at least 24 hours in June, with the remainder of June at 514 cfs to maintain channel habitat for trout production. As a minimum, observations at flows of 42.8 cfs indicated many riffles were exposed, and fish habitat along the banks was dewatered, leaving fish in cover-limited pools. The Deadman's Diversion rock ramp was completed in 2015.

Coldwater streams in this reach on federal lands have limited to substantial damages from off road vehicle trails work with the Forest Service to improve aquatic conditions while maintaining access.

Transition Zone

Wetted perimeter analysis in a reach just downstream of the city of Roundup determined that a flow of 80 cfs is needed for fishery maintenance. In the 1980s, FWP found some gravel bars were exposed at 76.7 cfs but determined that this flow still provided moderate fish habitat. The 2 year and 1.25 year recurrence flows were not reported for this zone. These values are important

to determine because they represent flows that typically maintain habitat and transport and redistribute silts and other sediments. Following recent flooding events, the Egge Diversion was removed, the Anderson and Naderman Diversions are no longer in the active stream channel.

Warmwater Zone

Wetted perimeter analysis at the Mosby Bridge resulted in a recommendation of 70 cfs to be met year round for fishery maintenance. In the 1970s, bank-full discharge for 2-year flood was estimated at 4,080 cfs, and 1.25-year flood was estimated at 1,860 cfs. It was recommended that these flows be provided annually during runoff, with 4,080 cfs for 24 hours and 1,860 cfs for several weeks after the high flow to help maintain fish habitat.

Studies determined that the Davis/Korenco Dam and Delphia-Melstone Dam create barriers for fish most of the time, but catfish and bass were able to bypass these structures during some high water events. Sauger and walleye were not documented passing these diversion dams. Because of tremendous overbank flooding in 2011, it is probable sauger, walleye and other species, if present, were able to bypass these dams. One burbot and a freshwater drum were caught below the Davis Dam in 1981 by FWP and a second burbot was reported by an angler as far up as Shawmut. These fish likely migrated from the Missouri River during spring flows. Good fishing can occur in the warmwater zone, but it is impaired due to erratic discharges and dams. If the Davis and Delphia-Melstone dams became passable to fish, it is likely other upstream dams would become the limiting factors to upstream fish movements during most flows. However, those upper dams represent less of a fish passage challenge than the lower two dams. FWP studies have also determined that the channel catfish in the warmwater zone often migrate between the Musselshell and the Middle Missouri Rivers. The Newton Diversion was flanked and may be removed in the future. Efforts to secure fish passage at the lower dams remains a priority however currently lacks landowner and irrigator support. Other opportunities to improve fish passage at upstream diversions may present themselves in the coming years.

FISHING ACCESS

Four existing FASs in this watershed are: Martinsdale Reservoir, Selkirk, Harlowton, and Deadmans Basin Reservoir, all in the Coldwater Zone. Other access can be found on Forest Service, BLM, state, county and city lands, and with permission by private landowners. Additional public access is needed throughout the basin, particularly in the warmwater zone. Recreation infrastructure on Bair Reservoir is in extremely poor condition. An agreement with Musselshell County for an FWP managed site near Roundup is expected to be completed by 2020. Discussions with MTDOT for a second site near Melstone were initiated in 2017.

Access to federal, state and local government ponds and some private ponds is available. Continue to look for additional opportunities for FAS sites and public and private ponds.

SPECIAL MANAGEMENT ISSUES

This basin has an active watershed group the Musselshell Water Coalition. This group has provided open dialog for all the issues of water management, irrigation, fish and wildlife, weeds, riparian management and other issues as they arise. It is very important FWP maintain the relationship with this group. This group has assisted with all the projects that improved fish passage such as the Deadman's Diversion rock ramp and removal of the Egge Diversion.

Substantial effort to improve flood issues in the Roundup area has lead to several projects to improve flood passage. The County has purchased properties to remove structures from the floodplain. Additionally, berms will be removed to reduce constrictions. Coal mine waste sites will be cleaned up and a Channel Migration Map was created for a section from the Naderman Diversion to the Kilby Butte Diversion below Roundup. The FAS with Musselshell County is a result of this ongoing project. This activity will re-establish a more natural floodplain improving conditions for warm water fish in this reach.

FISHERIES MANAGEMENT DIRECTION FOR MUSSELSHELL RIVER DRAINAGE

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
North Fork Musselshell - Headwaters to Bair Reservoir	11 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 3 cfs for habitat.					
Bair Reservoir	221 acres	Rainbow trout, Westslope cutthroat trout	Hatchery	Put, Grow and Take	Continue stocking at current rates.
		Brook trout	Wild	General	Manage as a recreational fishery with consumptive harvest.
North Fork Musselshell – Bair Reservoir to South Fork	16.5 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
		Brown trout	Wild	General	Evaluate population and potential for reproduction and harvest.
		Westslope cutthroat trout	Wild	General	Hatchery fish from Bair Reservoir.
Habitat needs and activities: Maintain flows of 16 cfs for habitat.					
Checkerboard Creek	6.5 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Manage all as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 6 cfs for habitat.					
Spring Creek	12 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 8 cfs for habitat.					
South Fork Musselshell River	30 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Manage all as a recreational fishery at historic levels.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Mountain whitefish (N)	Wild	General	Maintain at historic levels.
Habitat needs and activities: Maintain flows of 30 cfs for habitat.					
Alabaugh Creek	9 miles	Brook trout, Brown trout, Rainbow trout	Wild	General	Manage all as a recreational fishery at historic levels.
Habitat needs and activities: Maintain flows of 12 cfs for habitat.					
Cottonwood Creek	10.8 miles	Brook trout, Brown trout, Rainbow trout, Westslope cutthroat trout hybrids	Wild	Liberal Regulations	Manage as a recreational fishery at historic levels .
Habitat needs and activities: Maintain flows of 16 cfs for habitat. Monitor flow and entrainment associated with Gordon Butte Pump Storage Facility development.					
Martinsdale Reservoir	947 acres	Rainbow trout, Westslope cutthroat trout Brown trout	Hatchery Wild	Put, Grow and Take General	Continue stocking at current rates . Manage all as a recreational fishery with consumptive harvest.
Habitat needs and activities: Maintain connectivity work through programs to improve riparian area and stream habitat. Continue to support Musselshell River Distribution Project. Maintain flows of 80 cfs for habitat.					
Musselshell River Coldwater Zone (Confluence of North and South Forks to Barber)	53 miles	Brook trout, Rainbow trout, Brown trout, Mountain whitefish (N)	Wild	General	Maintain and enhance populations .
American Fork	34 miles	Brook trout, Brown trout	Wild	General	Manage as a recreational fishery at historic levels.
Lebo Creek	32 miles	Native minnows (N)	Wild	Conservation	

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Lebo Lake	309 acres	Tiger muskie, Rainbow trout, Brown trout	Hatchery	Put, Grow and Take	Not currently managed. Former Private Pond/Public Fishing pond. Would like to re-establish access and manage for species indicated.
Big Elk Creek	25 miles	Brook trout, Brown trout	Wild	General	Manage as a recreational fishery at historic levels.
Daisy Dean Creek	28 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Habitat needs and activities: Work with USFS for solutions to reduce/prevent impacts on riparian area from ATV traffic on Daisy Dean.					
Chief Joseph Pond	2 acres	Rainbow trout	Hatchery	Put and Take/ Family Fishing water	Continue stocking at current rates.
Forest Lake	21 acres	Cutthroat Hybrids	Wild	General	Evaluate periodically. Manage as a recreational fishery at historic levels.
Haymaker/ East Fork Haymaker	30 miles	Yellowstone cutthroat trout	Wild	General	Manage as a recreational fishery at historic levels. Test the East Fork population for genetic purity. Consider potential to use this population as a potential wild brood source with genetic mixing from other sources if found to be pure.
Deadmans Reservoir	2,120 acres	Tiger muskie Rainbow trout, Kokanee salmon	Hatchery Hatchery	Put, Grow and Take/ Quality Put, Grow and Take	Continue stocking at current rates, limit harvest to 1 over 40". Used to reduce sucker population in reservoir to improve trout and salmon growth. Evaluating Rainbow strains and stocking rates to improve body condition and size structure in fishery. Will adjust stocking rates to improve fishery.
Musselshell River Transition Zone (Barber to Roundup)	138 miles	Smallmouth bass	Wild	General	Evaluate 1970/1980's stocking to maintain fishery.

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Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Channel catfish (N)	Wild	Conservation	Continue wild transfer of a limited number of wild adults from the Warmwater Zone into the Transition Zone. Limited tag returns show fish remaining in section. Once natural reproduction takes hold discontinue transfers.
		Sauger (N)	Wild	Conservation	Consider expanding population to Deadmans Diversion. Consider potential for fish transfers and stocking to accomplish.
		Native minnow assemblage (N)	Wild	General	Improve or maintain habitat and water conditions.
Habitat needs and activities: Improve habitat to support ecosystem function and production of trout, whitefish, and native minnow and sucker populations. Maintain flows of 80 cfs for habitat in the Musselshell River					
Fish Creek	86 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
		Native minnow assemblage (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Careless Creek and Little Careless Creek	68 miles	Native minnow and sucker populations (N)	Wild	Conservation	Improve and maintain fish passage this tributary has one of the best native minnow populations in the area.
Big Coulee	51 miles	Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Painted Robe Creek	38 miles	Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Swimming Woman Creek	33 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
		Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Currant Creek	60 miles	Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Musselshell River Warm water Zone (Roundup to Confluence with Missouri River)	151 miles	Smallmouth bass	Wild	General	Manage as a recreational fishery at historic levels.
		Channel catfish (N)	Wild	Conservation	Manage as a recreational fishery at historic levels.
		Sauger (N)	Wild	Conservation	Limited population consider stocking and wild fish transfers from other waters.
		Native minnow assemblage (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
		Drum (N)	Wild	Conservation	Maintain viable population.
		Rainbow trout	Hatchery	Put, Grow and Take	Continue stocking reservoirs annually.
		Burbot (N)	Wild	Conservation	Evaluate population, improve fishery.
		Walleye	Wild	General	Evaluate population movements and influence on other fish consider increasing harvest .
Habitat needs and activities: Continue to manage connectivity to favor native fish. Maintain instream flow of 70 cfs on the Musselshell downstream of the Musselshell Diversion dam for habitat. Establish additional gage stations.					
Willow Creek	71 miles	Brook trout	Wild	General	Maintain viable population.
		Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
Flatwillow Creek	118 miles	Brook trout, Brown trout,	Wild	General	Manage all as a recreational fishery at historic levels.

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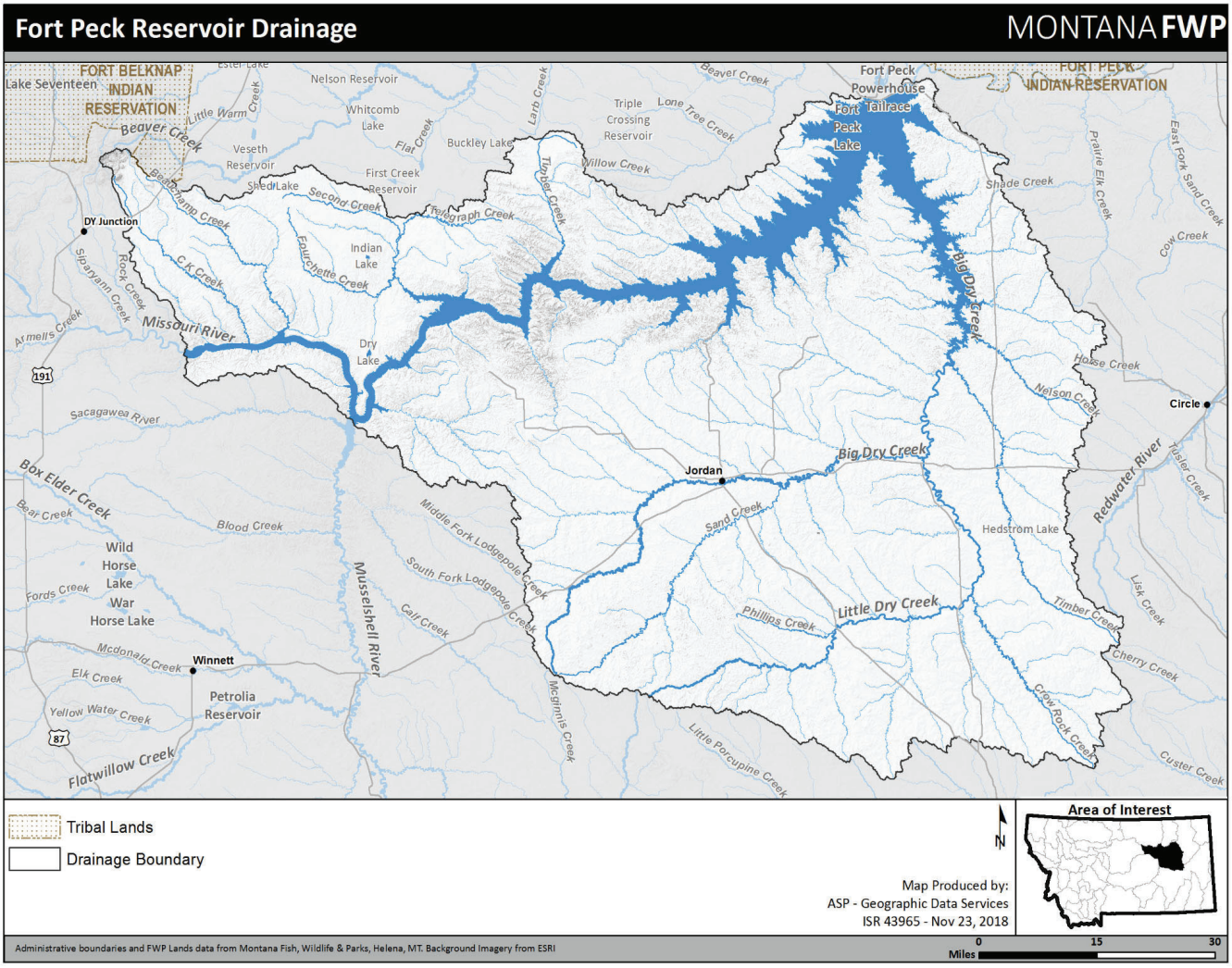
Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
		Native minnow and sucker species (N)	Wild	Conservation	Improve or maintain habitat and water conditions.
		Channel catfish (N)	Wild	Conservation	Manage as a recreational fishery at historic levels.
		Walleye	Hatchery/ Wild	General	Evaluate population source, likely escaping from Petrolia Reservoir. Evaluate population movements and influence on other fish, consider increasing harvest.
Habitat needs and activities: Maintain flows of 15 cfs for habitat. Additional access is needed upstream of highway 87.					
South Fork Flatwillow Creek	23 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
North Fork Flatwillow Creek	25 miles	Brook trout	Wild	General	Manage as a recreational fishery at historic levels.
Tributaries to Flatwillow and Box Elder, Collar Gulch and Halfmoon Creek	5 miles	Westslope cutthroat trout (N)	Wild	Conservation	Enhance and protect populations. Continue to work on project to expand westslope cutthroat trout in the Judith Mountains.
Habitat needs and activities: Maintain flows of 0.6 cfs for habitat in Collar Gulch Creek.					
Petrolia Reservoir	518 acres	Walleye, Rainbow trout	Hatchery	Put, Grow and Take	Manage as a recreational fishery with consumptive harvest .
		Northern pike, Yellow perch, Bluegill	Wild	General	Manage as a recreational fishery at historic levels.
Jakes Reservoir	18 acres	Sauger (N)	Wild	General	Evaluate options for additional stocking of sauger such as via wild fish transfer.
		Yellow perch	Wild	General	Manage as a recreational fishery with consumptive harvest .

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Numerous BLM Ponds		Largemouth bass, Crappie, Rainbow trout	Hatchery	Put, Grow and Take	Maintain stocking at current rates. Identify naturally reproducing populations. Manage recreational fisheries with consumptive harvest.
Habitat needs and activities: Coordinate with BLM for water level management, dam repair and habitat concerns.					
Numerous Private Ponds allowing Public Fishing		Largemouth bass, Rainbow trout	Hatchery	Put, Grow and Take/ Family Fishing Waters	Maintain stocking at current rates.


Fort Peck Reservoir Drainage
MONTANA FWP
FORT BELKNAP INDIAN RESERVATION
FORT PECK INDIAN RESERVATION
Lake Seventeen
Nelson Reservoir
Whitcomb Lake
Beaver Creek
Little Warm Creek
Veseth Reservoir
Buckley Lake
Flat Creek
Lamb Creek
Triple Crossing Reservoir
Lone Tree Creek
Fort Peck Powerhouse
Fort Peck Tailrace
Fort Peck Lake
Willow Creek
Timber Creek
First Creek Reservoir
Shed Lake
Second Creek
Telegraph Creek
Shade Creek
Prairie Elk Creek
East Fork Sand Creek
Cow Creek
DY Junction
Indian Lake
Fourchette Creek
Big Dry Creek
Rock Creek
C.K Creek
Missouri River
Dry Lake
Armells Creek
191
Sacagawea River
Horse Creek
Nelson Creek
Circle
Jordan
Big Dry Creek
Box Elder Creek
Bear Creek
Blood Creek
Middle Fork Lodgepole Creek
Sand Creek
Hedstrom Lake
Redwater River
Tusler Creek
Wild Horse Lake
War Horse Lake
Fords Creek
South Fork Lodgepole Creek
Musselshell River
Calf Creek
Phillips Creek
Little Dry Creek
Lisk Creek
Timber Creek
Cherry Creek
Mcdonald Creek
Winnett
Elk Creek
Petrolia Reservoir
Yellow Water Creek
87
Mcginnis Creek
Little Porcupine Creek
Crow Rock Creek
Custer Creek
Flatwillow Creek
Tribal Lands
Drainage Boundary
N
Area of Interest
Map Produced by:
ASP - Geographic Data Services
ISR 43965 - Nov 23, 2018
Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Background Imagery from ESRI
0
15
30
Miles

FORT PECK RESERVOIR DRAINAGE

PHYSICAL DESCRIPTION

Fort Peck Reservoir is formed by a large earth-filled dam located on the Missouri River in the northeastern part of Montana. Completed in 1937, it is the largest body of water in the state, with 246,000 surface acres and 1,520 miles of shoreline at full pool. The reservoir is 134 miles in length and has a maximum depth of 220 feet when full. Major tributaries to Fort Peck Reservoir include the Missouri River, the Musselshell River, and Big Dry Creek. The Musselshell and Missouri rivers are discussed in their own drainage plans. The habitat at the mouths of these streams is closely tied to Fort Peck Reservoir levels; several stream miles are inundated at normal to high pool levels. This watershed encompasses a drainage basin of 57,500 square mile basin and is located within Phillips, Valley, Fergus, Petroleum, Garfield, and McCone counties. Administration of all land and water within the executive boundary of the Charles M. Russell (CMR) National Wildlife Refuge is shared by the U.S. Fish & Wildlife Service and the U.S. Army Corps of Engineers (USACE) in accordance with a Memorandum of Agreement. The reservoir is operated by the Corp of Engineers to provide water for power, flood control, irrigation, navigation and recreation.

FISHERIES MANAGEMENT

The fishery in Fort Peck Reservoir is diverse with 47 different fish species, most of which are native to the Missouri River. Sixteen species, mostly game fish, have been introduced by FWP to develop sport-fishing opportunities. Walleyes and northern pike were both introduced in 1951 followed by lake trout in the mid 1950's. Smallmouth bass were introduced in 1981 and chinook salmon in 1983. During the 1980's spottail shiners and cisco were also introduced to supplement the existing forage base. Additionally, native game fish including burbot, channel catfish, paddlefish, and sauger are sought by anglers throughout the reservoir. Because of the diversity and world class fishery that Fort Peck Reservoir has to offer, it is ranked number one in the region in number of angler days, and within the top ten on a statewide level.

The quality multi-species fishery found in the reservoir is the result of ongoing management efforts by FWP. Key to this effort is an understanding of the variable nature of fish populations. Specifically, natural reproduction is largely influenced by reservoir water levels and environmental conditions at time of spawn. As a result, extensive stocking programs for walleye and chinook salmon are in place to reduce population variability. These introductions were carefully analyzed to determine the long-term benefits to the fishery. Evaluation of management success is done through standardized monitoring combined with angler surveys. This basic monitoring program allows estimates of catch rates, size of fish, and overall angler satisfaction.

HABITAT

Fort Peck Reservoir, much like other storage reservoirs, typically has annual varial zones where annual water level fluctuations produce a suite of impacts to the aquatic environment and associated terrestrial environment. This unstable zone is subject to loss of aquatic and terrestrial plants and associated populations of phytoplankton and benthic organisms. Lack of submerged vegetation causes a decline in the overall productivity of the entire fish population by reducing

food supply, spawning habitat, and rearing cover. Submerged vegetation also provides protective cover for forage fish and young game fish species. Additionally, varial zones provide areas for successful colonization of aquatic invasive species such as Eurasian Watermilfoil (EWM), a submerged aquatic weed discovered in 2010. EWM has the potential to outcompete native aquatic plants and under certain conditions, dominate the aquatic plant community in the reservoir.

During the late l950's and early 1960's rising water levels on Fort Peck Reservoir inundated vegetation and produced an outstanding fishery for northern pike, crappie, and yellow perch. In addition, walleye abundance improved after increases in reservoir elevation and high flows in the Big Dry Arm during the late 1970's. Higher reservoir elevations and increased flows allowed adult walleye to access suitable spawning substrate in the Big Dry Arm. Reservoir water level management and tributary flows do not appear conducive to natural reproduction of walleyes on a consistent basis and as a result, a large scale hatchery stocking program has been implemented annually to ensure that this high quality fishery is maintained. Recommendations from FWP to enhance and maintain the Fort Peck fishery are submitted annually to the USACE for inclusion into the Annual Operating Plan process. Montana requests are coordinated with other Missouri River states through the Missouri River Natural Resource Committee.

Attempts by local sportsman groups to improve spawning habitat to enhance the fishery have been undertaken in the form of spawning fences and Christmas tree reefs. However, due to the vastness of the reservoir, no measurable benefits to the fishery have been noted. Cobble or rock spawning reefs have been considered to aid natural reproduction of walleye, but cost is prohibitive and long-term effectiveness is uncertain due to siltation and water level fluctuations.

Fishing Access

Fort Peck Reservoir is surrounded by public access within the CMR National Wildlife Refuge. However, due to the size of the reservoir and poor condition of roads/trails, access opportunities are somewhat limited. A total of 13 public access sites (12 boat ramps) are located around the reservoir, which are administered by USACE. These recreation sites are managed privately or by federal government natural resource agencies. Specific recreation sites managed by FWP include Duck Creek Fishing Access Site (FAS) near Fort Peck, Rock Creek FAS on the Big Dry Arm, and Hell Creek State Park north of Jordan. This site is managed by the FWP Parks Division.

Various projects have been implemented over the years to improve access to Fort Peck Reservoir. Counties, federal and state agencies have partnered and leveraged federal funds to accomplish much of this work. Projects have been completed at Duck Creek FAS, Pines Recreation Area, Hell Creek State Park, Crooked Creek, Flat Lake/Spillway, McGuire Creek, Fourchette Bay and Nelson Creek Recreation areas.

Special Management Issues

The 2012-2022 Fort Peck Reservoir Fisheries Management Plan was completed in December of 2011. The Plan reflects the public's desire for a high quality, cost effective, multi-species fishery in Fort Peck Reservoir. Additionally, this plan represents the on-going evolution of fisheries management on Fort Peck Reservoir. Of principal importance is to efficiently develop and

implement a scientifically sound sampling program and use these data to make management decisions for the Fort Peck Reservoir fishery that ensure biological and social sustainability. The following is a synopsis of the plan.

Walleye Stocking

FWP will aim to stock a minimum of 3.0 million walleye fingerlings annually in Fort Peck Reservoir. Fingerling stocking will be augmented with fry as conditions and availability allow.

Walleye fingerling production at the hatcheries will depend on quality and quantity of eggs collected, egg hatching success and pond production. If fingerling production exceeds 3 million, biological and environmental conditions (listed below) will be reviewed to determine if stocking additional walleyes is justified. Stocking rates may be reduced if biological and environmental conditions are unfavorable to maintaining a high-quality walleye fishery. Continue to evaluate walleye fingerling and fry survival and recruitment. Walleye stocking rates will be guided by reservoir water levels, physical condition of the existing walleye population, and forage fish abundance. The goal of this plan is to maximize hatchery production of walleye to ensure that biologically based stocking rates are met.

Walleye Catch Rates

FWP will work to achieve angler catch rates of 0.4 walleye per hour during periods of the summer creel on Fort Peck Reservoir. The highest documented angler catch rate for walleye on Fort Peck Reservoir occurred in 2008, with 0.28 fish per hour. The goal of 0.4 fish per hour will likely not occur throughout the reservoir but seasonally in regions of the reservoir. For example, walleye catch rates of 0.5 fish per hour were observed in July during the 2008 Fort Peck creel survey. Walleye fisheries in surrounding states and provinces throughout the Midwest, which have limited natural reproduction, like Fort Peck, consistently have lower catch rates. Walleye catch rates exceeding 0.3 fish per hour are generally considered excellent. The goal of this plan is to maximize walleye angler catch rates while ensuring a sustainable walleye fishery.

Tournaments

Angling tournaments continue to grow in popularity on Fort Peck Reservoir. In 2001, the first year of the previous Fort Peck fisheries management plan, three walleye tournaments and one smallmouth bass tournament were permitted. In 2011, 13 tournaments were proposed consisting of eight walleye, three smallmouth bass, one northern pike, and one salmon/lake trout tournament. The increase in proposed tournaments in 2011 on Fort Peck Reservoir led to the denial of one tournament entry because management plan stipulations under the old plan stated that no more than 12 open water tournaments will be held per year. The management plan further stated that preference will be given to applicants who held previous tournaments on Fort Peck Reservoir. This structure has led to inequality for non-established tournaments because established tournaments occupy the 12 available slots.

Because of the increasing number of tournaments and scheduling conflicts with holiday weekends on Fort Peck Reservoir, the 2011 open water season had a tournament scheduled every weekend during the months of June and July minus the holiday weekends. Non-tournament anglers have expressed frustration with the lack of tournament-free weekends during peak summer months and state that impacts associated with tournament pre-fishing needs to be

addressed. The goal of the current plan is to reduce conflict between non-tournament anglers while ensuring the tradition of tournament fishing continues. The following list of criteria will be used to meet this goal.

Fort Peck Reservoir Management Plan Tournament Guidelines

1. A maximum of 16 tournaments will be permitted per calendar year.
    a. No more than 12 open water and 4 ice tournaments will be permitted per calendar year.
    b. No more than 6 tournaments will be permitted from June 1st through July 30th.
    c. No tournaments will be permitted for the weekends of Memorial Day, Father's Day, Fourth of July, or Labor Day.
    d. Only one tournament per weekend will be permitted.
    e. Established Fort Peck tournaments of 10 consecutive years or more will be given preference.
    f. Applicants will be required to list first, second and third choice tournament dates on applications.
    g. In years where more applications are received than available tournament dates, applications will be entered in a lottery.
    h. Unsuccessful applicants will receive one bonus point. Tournament applications will be entered into the lottery in subsequent years and bonus points will be applied (e.g. if an applicant has accumulated one bonus point, that application will be entered into the lottery two times).
2. Tournaments will be reviewed on an individual basis. Evaluation of proposed tournaments will include potential biological and social impacts. Proposed tournaments will undergo a 30-day public review and comment period.
3. All catch and release tournaments with weigh-in type format will be limited to cool weather periods: May-June 15, or after September 15.
4. Tournament boundaries must be clearly defined in the application. Proposed boundary size should be minimized in an effort to reduce tournament related fish mortality caused by fish being held in live-wells for extended periods of time and/or traveling long distances.

Tournament directors will be required to report post-tournament catch-rate information in a standardized format.

FISHERIES MANAGEMENT DIRECTION FOR FORT PECK RESERVOIR DISTRICT

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Fort Peck Reservoir (Headwaters Downstream to Fort Peck Dam)	246,000 acres	Walleye	Hatchery/ Wild	General	Continue to place the primary management emphasis on walleye. Adhere to stocking guidelines of the Fort Peck Reservoir Fisheries Management Plan.
		Northern pike, Smallmouth bass	Wild	General	Continue to monitor populations. Rely on variable natural reproduction and survival to determine population levels.
		Lake trout	Wild	General	Rely on variable natural reproduction and survival to determine population abundance. Evaluate stocking lake trout if conditions warrant. Monitor populations through annual surveys.
		Chinook salmon	Hatchery	Put, Grow and Take	Adhere to stocking guidelines of the Fort Peck Reservoir Fisheries Management Plan. Monitor populations through annual surveys.
		Burbot (N), Channel catfish (N)	Wild	General	Continue to monitor populations. Better understand factors for limited recruitment.
		Sauger (N)	Wild	Restrictive Regulations	Continue to monitor populations. Better understand factors for limited recruitment.
Sentinel Reservoir	14 acres	Rainbow trout	Hatchery	Put, Grow and Take	Manage for put grow and take rainbow trout fishery.
Habitat needs and activities: Look for opportunities to increase riparian habitat and aesthetic values.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Big Dry Creek Little Dry Creek	149 miles 69 miles	Channel catfish (N) Multi-species	Wild Wild	General General/Conservation	Continue to monitor populations. Manage for recreational fishing opportunity where applicable. Monitor non-game fish species for native fish assemblage and overall ecosystem health.
Trout Ponds North of Reservoir-Located Throughout Blaine, Phillips, and Valley Counties	Numerous	Rainbow trout, Brook trout	Hatchery	Put, Grow and Take	Monitor water conditions and impacts from winterkill. Stock trout based on current 6-year stocking plan.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths. Continue to collect distribution data on Northern redbelly dace and chrosomid dace populations. Evaluate non-native fish stocking and commercial minnow collection to ensure dace populations are not impacted by these actions.					
Warmwater Reservoirs and Ponds North of Reservoir-Located Throughout Blaine, Phillips, and Valley Counties	Numerous	Largemouth bass, Northern pike, Walleye, Smallmouth bass, Channel catfish (N), Black crappie, Yellow perch, Bluegill	Wild/ Hatchery	General/ Put, Grow and Take	Manage as self-sustaining fisheries. Supplement populations with hatchery stocking and wild fish transfers as needed. Monitor water conditions and impacts from winterkill.
Habitat needs and activities: Work with Bureau of Land Management and landowners to increase riparian habitats and aesthetic landscapes surrounding the ponds. Maintain windmill aeration systems on ponds with marginal depths. Continue to collect distribution data on Northern redbelly dace and chrosomid dace populations. Evaluate non-native fish stocking and commercial minnow collection to ensure Dace populations are not impacted by these actions.					

Water	Miles/acres	Species	Recruitment Source	Management Type	Management Direction
Cow Creek- Headwaters to Cow Creek Reservoir	8 miles	Brook Trout	Wild	General	Protect Habitat and provide fish passage when applicable.
Cow Creek- Cow Creek Reservoir tailwaters to confluence with Missouri River	46 miles	Native non-game fishes	Wild/Hatchery	General/Put, Grow, Take	Protect habitat and provide fish passage when applicable.
Habitat needs and activities: Identify habitat issues and work closely with local conservation districts, county road crews, and landowners to implement safe water crossings which emphasis fish passage and water connectivity.					
Private Ponds/Reservoirs South of Reservoir in FWP Region 7 Pond Program	Numerous	Trout	Hatchery	Put and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and annual stocking.
		Bass, Walleye, Northern pike	Wild/ Hatchery	General/ Put, Grow and Take	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Maintain fishery through regulations and stocking when necessary.
		Crappie, Yellow perch, Bluegill	Wild/ Transfer	General	Public relations opportunity with landowners to provide local fishing opportunity for rural community. Provide panfish angling opportunity, supplement population through wild fish transfers when necessary.